DVD Receiver

LX3700D/21S/21R/22S/25S
LX3750W/22S/25S/37

Service
Service
Service

LX3700D

LX3750W

Service Manual

TABLE OF CONTENTS

	Page
Location of PC Boards	1-2
Versions Variation & Package	1-2
Specifications	1-3
Measurement Setup	1-4
Service Aids	1-5
ESD & Safety Instruction	1-6
Functional Overview	1-7 to1-8
Preparations & Connections	1-9 to1-12
Connections & Troubleshooting	1-13
Wireless System Information	1-14
Setting Procedure & Repair Instructions	2
Disassembly Instructions & Service positions	3
Block & Wiring Diagram	4
Control & Speaker Jack Board	5
RGB & Scart Board	6
DVD Module	7
Main Board (Include Headphone Board)	8
Power Board	9
Mechanical Exploded View & Parts List	10
Wireless Surround Loudspeaker Boxes	11

CLASS 1
LASER PRODUCT

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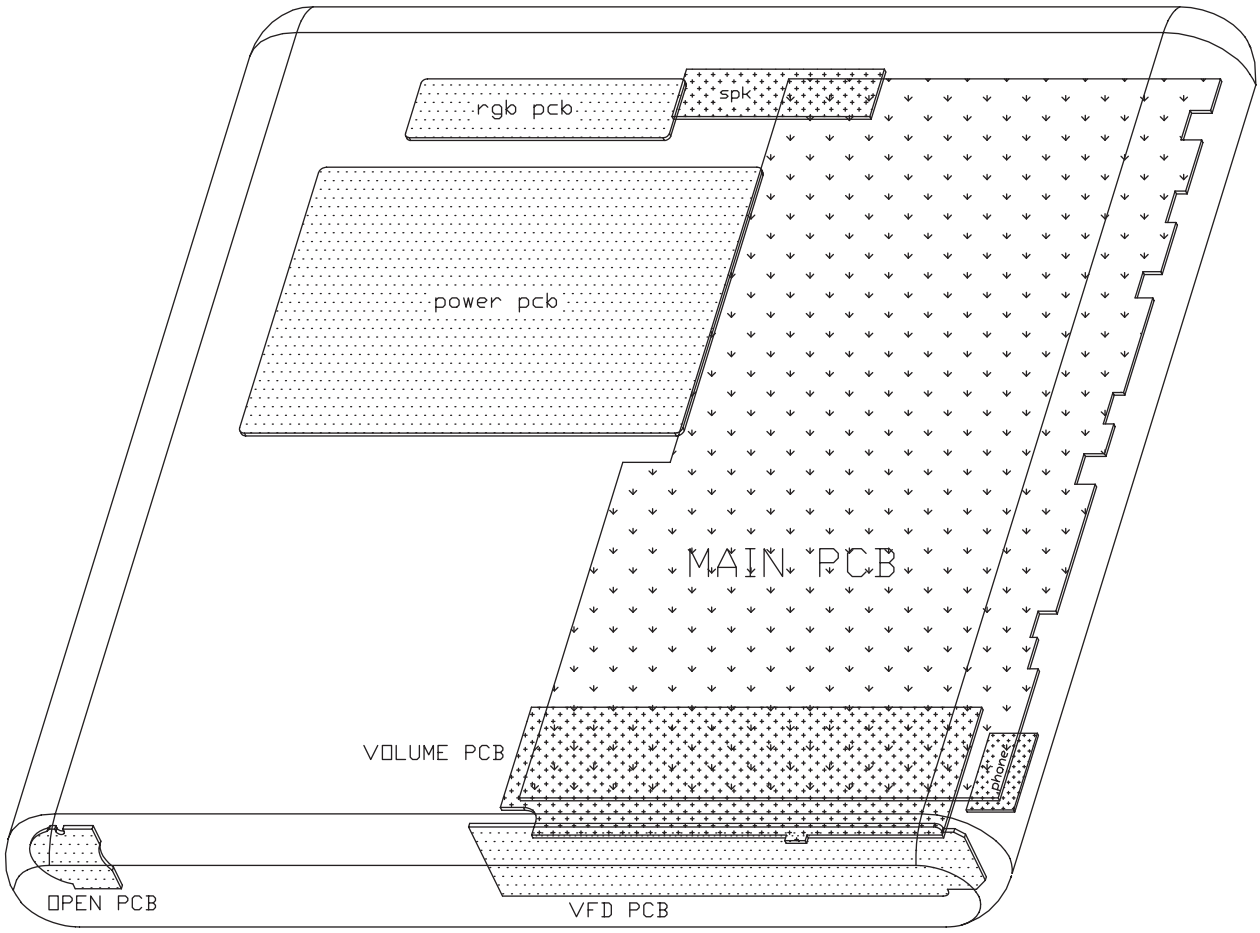
Version 1.1

PHILIPS

LOCATION OF PC BOARDS



VERSION VARIATION:

Type/Versions Features & Board in used	LX3700D /21S	LX3700D /21R	LX3700D /22S	LX3700D /25S	LX3750W /37	LX3750W /22S	LX3750W /25S
RDS function			x	x		x	x
Progressive scan	x	x			x		
Scart board			x	x		x	x
RGB board	x	x			x		
Power PCB(120V)					x		
Power PCB(110V~127V/220V~240V)	x	x					
Power PCB(220V~240V)			x	x		x	x
AC Voltage Selector	x	x					
Line Cord (Detachable)	x	x	x	x		x	x
Line Cord (Fixed)					x		
Region Code	4	3	2	2	1	2	2

SPECIFICATIONS

AMPLIFIER SECTION

Power Output
- Stereo mode (DIN).....2 x 50 W
- Surround mode (1 kHz).....50 W RMS/channel
Total Harmonic Distortion.....10 % at rated power (1 kHz)
Frequency Response .....180 Hz-14 kHz/±1 dB
Signal-to-Noise Ratio.....> 65dB(CCIR)
Input Sensitivity.....400 mV

DVD SECTION

Audio Performance :

Laser Type.....Semiconductor
Disc Diameter.....12cm/8cm
Video Decoding.....Mpeg-2
Video DAC.....10 Bits
Signal System.....PAL/NTSC
Video Format.....4:3 / 16:9
Video S/N.....65 dB (minimum)
Composite Video Output.....1.0Vp-p, 75 ohm
S-Vodeo Output.....Y - 1.0Vp-p, 75 ohm
.....C - 0.286Vp-p, 75 ohm
Audio DAC.....Direct Digital Amplification
Frequency Response.....4 Hz-20 kHz (44.1kHz)
..... 4 Hz-22 kHz (48 kHz)
..... 4 Hz-44 kHz (96 kHz)
Digital Output.....SPDIF Coaxial & Optical

TUNER SECTION

Tuning Range..... FM 87.5 -108 MHz
FM Grid.....50 kHz /22S/25S
..... 50 kHz/100 kHz (Switchable) /21S/21R
..... 100 kHz /37
.....AM (MW)531-1602 kHz /21S/21R/22S/25S
.....AM (MW)530-1710 kHz /37
AM (MW) Grid.....9 kHz /22S/25S
..... 9 kHz/10 kHz (Switchable) /21S/21R
..... 10 kHz /37
26 dB Quieting Sensitivity.....FM 20 dB
26 dB Quieting Sensitivity.....AM (MW)5000 uV/m
Image Rejection Ratio.....FM 25 dB
.....AM (MW) 28 dB
IF Rejection Ratio.....FM 60 dB
.....AM (MW) 24 dB
Signal-to-Noise Ratio.....FM 55 dB
.....AM (MW) 35 dB
AM Suppression Ratio.....FM 30 dB
Harmonic Distortion.....FM Mono 3%
.....FM Stereo 3%
.....AM (MW) 5%
Frequency Response.....FM 180 Hz-10kHz/±6 dB
Stereo Separation.....FM 26 dB(1 kHz)
Stereo threshold.....FM 23.5 dB

MISCELLANEOUS / GENERAL SECTION

Power Supply Rating.....110-127V/220-240V, 50/60Hz
/21R/21S
.....220-240V/50Hz /22S/25S
.....110-127V/60Hz /37
Power Consumption..... 160 W
Dimensions (w x h x d)..... 390 mm x 55 mm x 399mm
Weight.....3.6 kg

IR REMOTE CZONTROL

Effective Range.....> 8 Meter
Number of Keys.....45
Battery (1.5V).....AA x 2

SPEAKERS

Front Speakers

System.....2-way shielded
Impedance/ ohm.....8Ω
Speaker drivers.....2 x 2" woofer, 1.75" tw
Dimensions (w x h x d)..... 88 mm x 293 mm x 88 mm
Weight..... 0.65 Kg

Center Speaker

System.....2-way shielded
Impedance/ ohm.....8Ω
Speaker drivers.....2 x 2" woofer, 1.75" tw
Dimensions (w x h x d).....280 mm x 79 mm x 72 mm
Weight..... 0.72 Kg

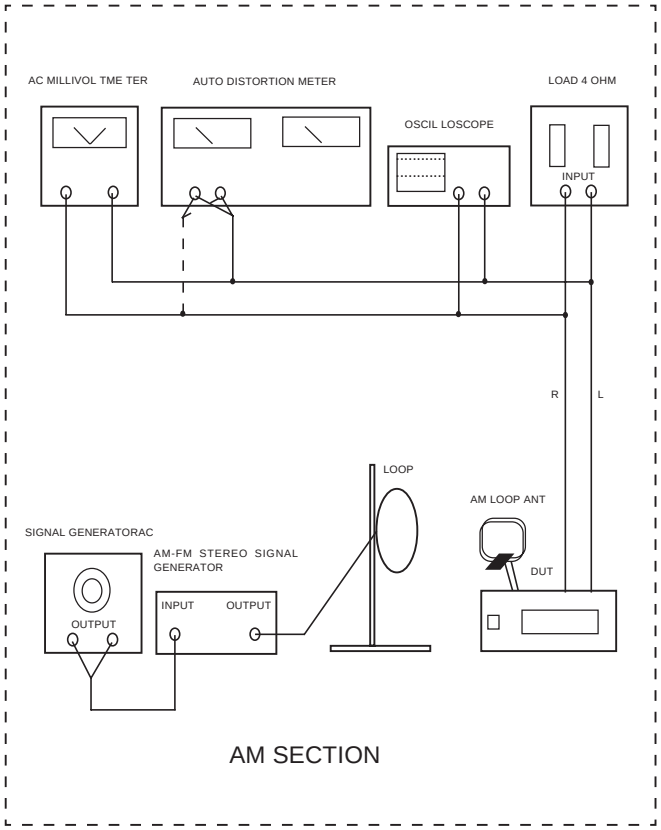
Surround Speakers

System.....2-way shielded
Impedance/ ohm.....8Ω
Speaker drivers.....2 x 2" woofer, 1.75" tw
Dimensions (w x h x d).....72 mm x 283 mm x 376 mm
Weight..... 0.62 Kg

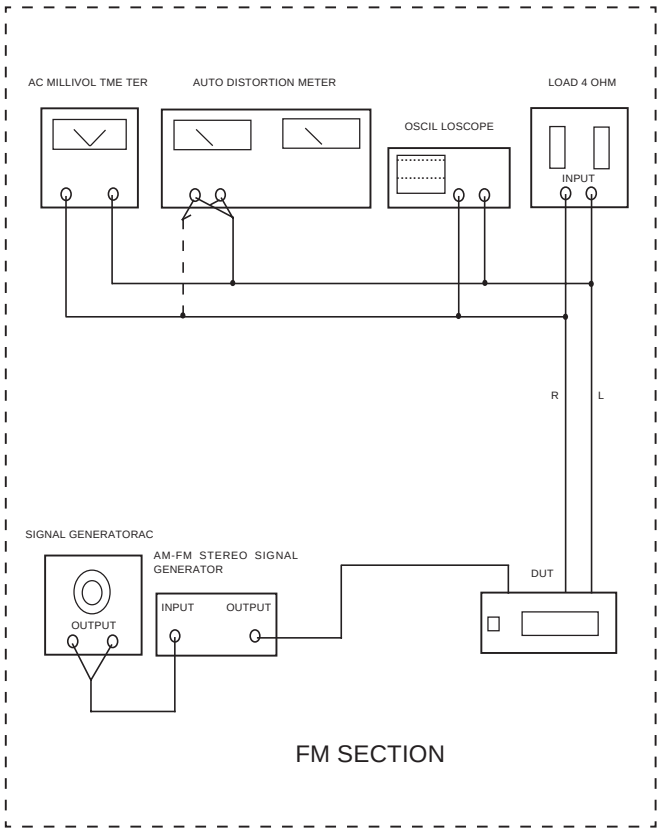
SUBWOOFER

Subwoofer (Not magnatically shielded design).....6.5"
Input power.....50W (8Ω,DIN)
Dimensions (w x h x d).....130 mm x 328 mm x 376 mm
Weight.....4.9 Kg

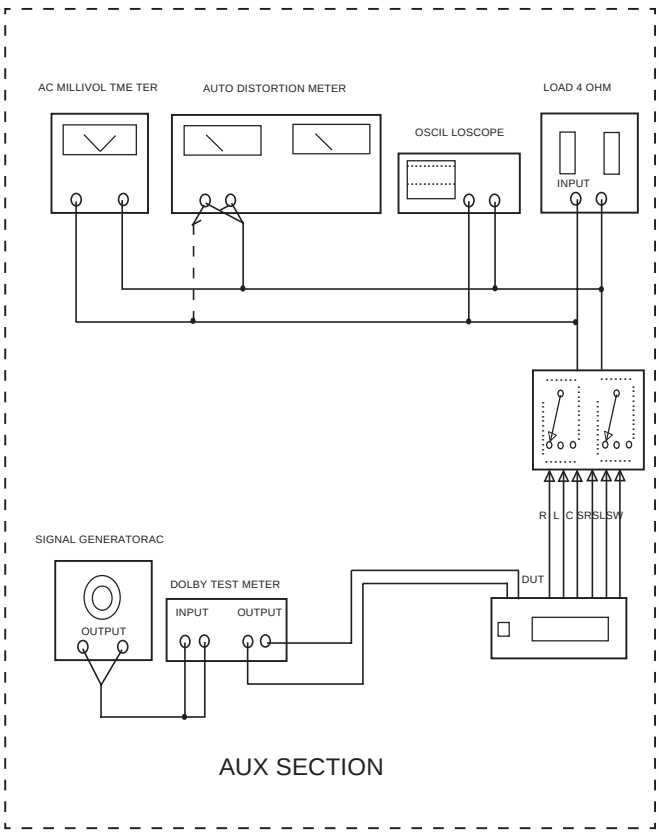
MEASUREMENT SETUP



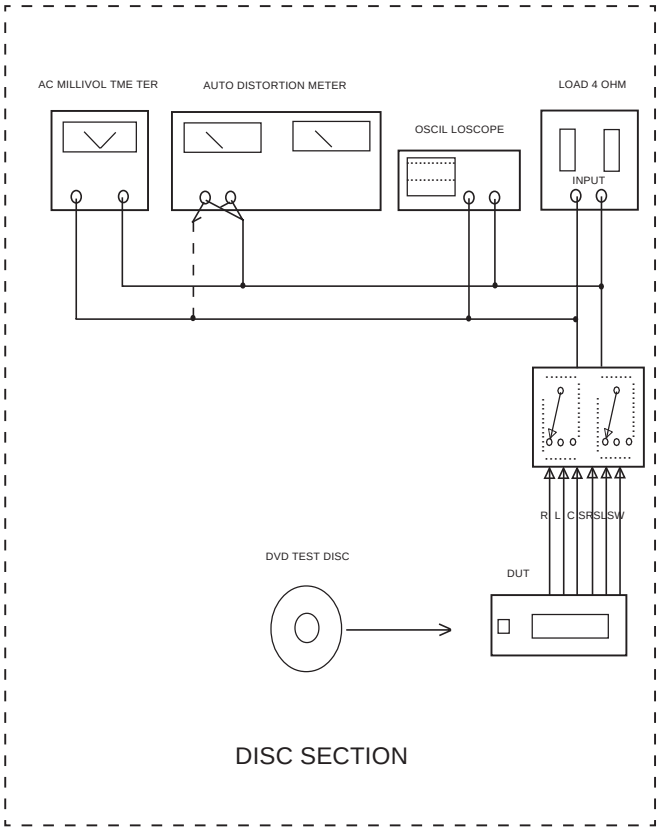
AM SECTION



FM SECTION



AUX SECTION



DISC SECTION

SERVICE AIDS

Service Tools:

Universal Torx driver holder 4822 395 91019
Torx bit T10 150mm 4822 395 50456
Torx driver set T6-T20 .....4822 395 50145
Torx driver T10 extended 4822 395 50423

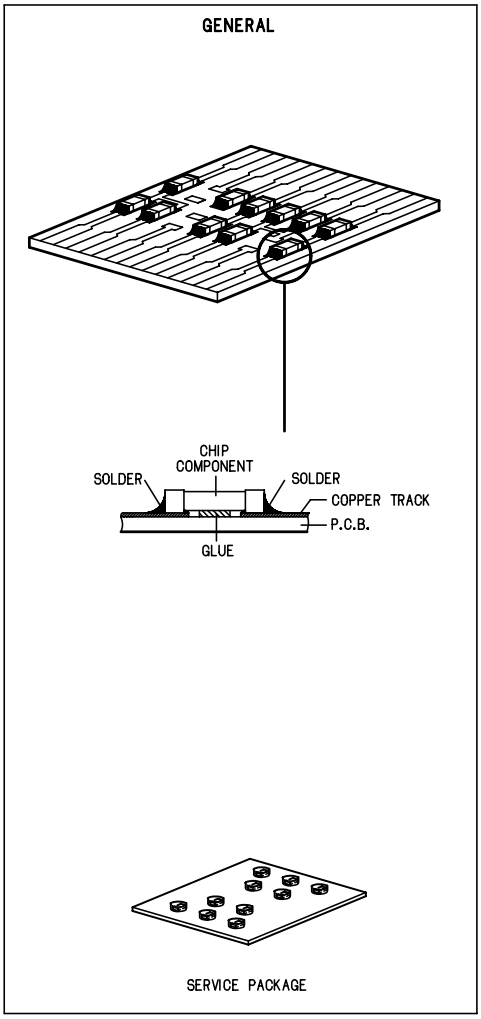
Compact Disc:

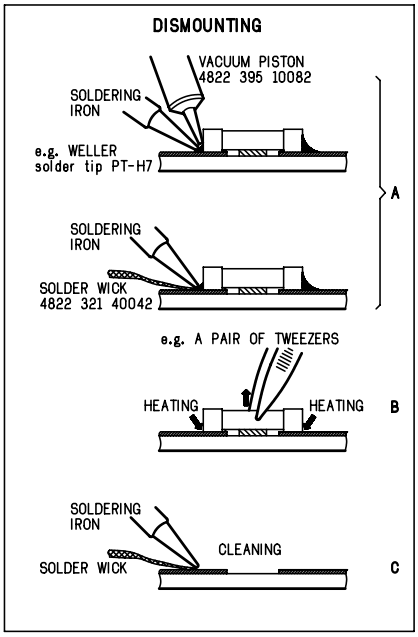
SBC426/426A Test disc 5 + 5A 4822 397 30096
SBC442 Audio Burn-in test disc 1kHz 4822 397 30155
SBC429 Audio Signals disc 4822 397 30184
Dolby Pro-logic Test Disc 4822 395 10216

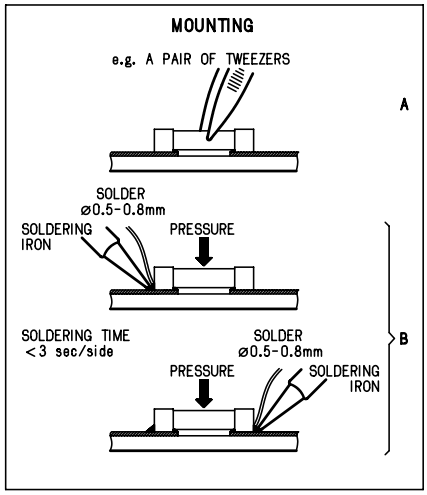
ESD Equipment:

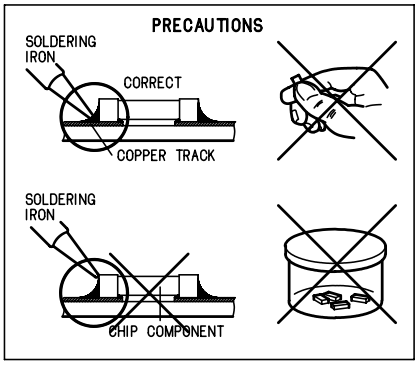
Anti-static table mat - large 1200x650x1.25mm ...4822 466 10953
anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connectorbox (1MΩ) 4822 395 11307
Extension cable
(to connect wristband to conn.box) 4822 320 11305
Connecting cable
(to connect table mat to conn.box) 4822 320 11306
Earth cable (to Connect product to mat or box) --4822 320 11308
Complete kit ESD3
(combining all above products) 4822 320 10671
Wristband tester 4822 344 13999

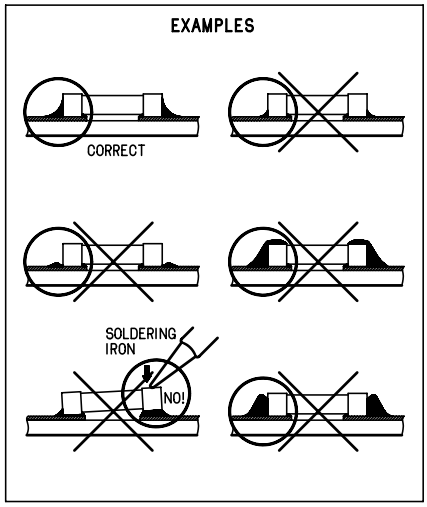
HANDLING CHIP COMPONENTS











ESD

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

GB Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

S Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

SF Varoitus !

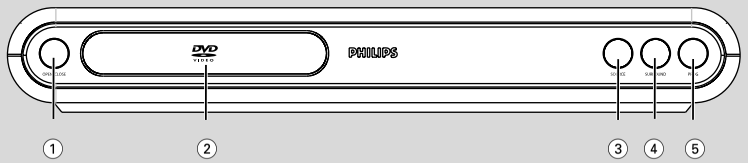
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

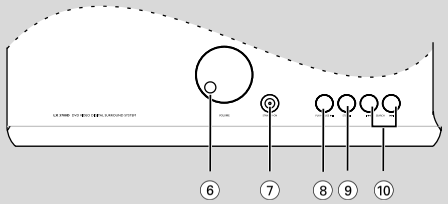
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

Front panels

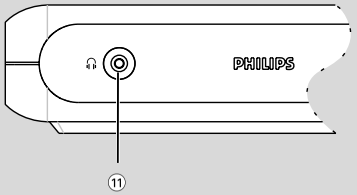
Front view



Top view



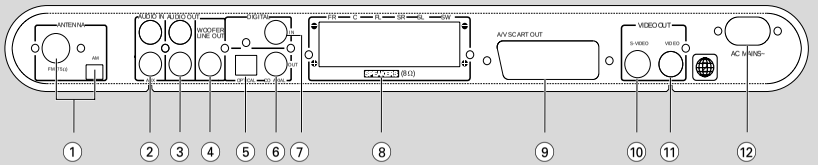
Side view



① **OPEN / CLOSE**
– to open or close the disc tray.
② **Disc Tray**
③ **SOURCE**
– to select the relevant active mode: TV/AV, DISC, TUNER or AUX/DI.
④ **SURROUND**
– to select multichannel surround (Dolby Digital, DTS, VSS Dolby ProLogic or Dolby ProLogic II) or stereo sound effect.
⑤ **PROGRAM**
– in Disc mode, to program disc tracks.
– in Tuner mode, to program preset radio station.
⑥ **VOLUME**
– to adjust the master volume.
⑦ **STANDBY-ON**
– to switch between power on and standby modes.
⑧ **PLAY / PAUSE ►II** (in Disc mode only)
– to start or interrupt disc playback.
⑨ **STOP ■** (in disc mode only)
– to stop playing the disc.
⑩ **SEARCH |◄◄ / ►►|**
– in Disc mode, press to skip to the previous/next chapter/ track.
– in Disc mode, hold down to fast reverse/forward the disc.
– in Tuner mode, to tune to a lower or higher radio frequency.
⑪ 🎧
– to connect headphones.

Functional Overview

Rear panel

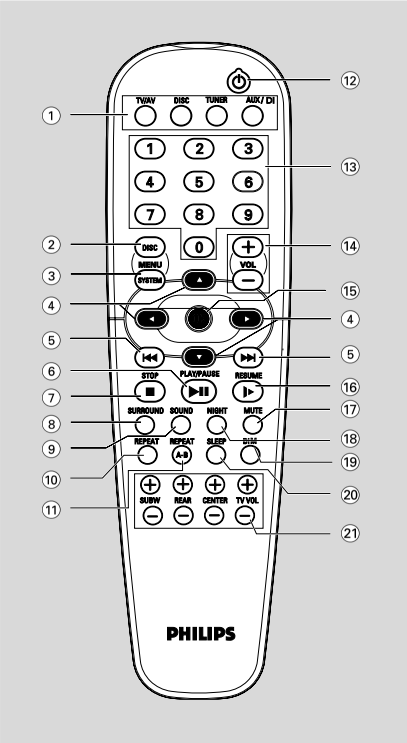


① **MW / FM ANTENNA**
– connect to the MW loop antenna or FM antenna.
② **AUDIO IN -AUX**
– connect to the analog audio outputs of a TV or VCR.
③ **AUDIO OUT**
– connect to the analog audio inputs of an external recording device or amplifier.
④ **WOOFER LINE OUT**
– connect to an active subwoofer (Optional).
⑤ **DIGITAL OUT - OPTICAL**
– connect to an audio equipment with digital (optical) audio input.
⑥ **DIGITAL OUT - COAXIAL**
– connect to an audio equipment with digital (coaxial) audio input.
⑦ **DIGITAL IN**
– connect from an audio equipment with digital audio output.
⑧ **SPEAKERS**
– connect to the front, center, rear (surround) and subwoofer speakers.
⑨ **A/V SCART OUT**
– connect to TV with SCART input.
⑩ **S-VIDEO OUT**
– connect to a TV with S-video input.
⑪ **VIDEO OUT**
– connect to a TV with video input.
⑫ **AC Power Cord**
– connect to a standard AC outlet.

Caution: Do not touch the inner pins of the jacks on the rear panel. Electrostatic discharge may cause permanent damage to the unit.

Functional Overview

Remote Control



Notes for remote control:

- *First, select the source you wish to control by pressing one of the source select keys on the remote control (DISC or TUNER, for example).*
- *Then select the desired function (►, I◄◄, ►►I for example).*

① **SOURCE**
- to select the relevant active mode: TV/AV, DISC, TUNER or AUX/DI.
- TUNER: toggles between FM and AM band.
- AUX/DI: toggles between AUX-ANA and AUX-DIG (Digital Input) mode.

② **DISC MENU (disc mode only)**
- to enter or exit the disc contents menu.

③ **SYSTEM MENU (disc mode only)**
- to enter or exit the system menu bar.

④ **▲ / ▼ / ◄ / ►**
- in Tuner mode, to select a preset radio station number (◄ or ►).
- to select movement direction in disc contents menu/ system menu bar.

⑤ **I◄◄ / ►►I**
- in Disc mode, press to skip to the previous/next chapter/ track.
- in Disc mode, hold down to fast reverse/forward the disc.
- in Tuner mode, to tune to a lower or higher radio frequency.

⑥ **►II**
- to start or interrupt disc playback.

⑦ **■**
- to stop playing the disc.

⑧ **SURROUND**
- to select multichannel surround (Dolby Digital, DTS, VSS, Dolby Pro Logic or Dolby Pro Logic II) or stereo sound effect.

⑨ **SOUND**
- to select the various sound effect : CONCERT, DRAMA, ACTION, SCI-FI, CLASSIC, JAZZ, ROCK or DIGITAL.

⑩ **REPEAT**
- to repeat chapter, title, track, album or disc.

⑪ **REPEAT A-B**
- to repeat a specific section on a disc.

⑫ **POWER** ⏻
- to switch to standby mode.

⑬ **Numeric Keypad (0-9)**
- to enter a track/title number of the disc.
- to enter a number of preset radio stations.

⑭ **VOL +/–**
- to adjust the volume level.

⑮ **OK**
- to exit or confirm the selection.

⑯ **RESUME**
- to continue disc playback after an interruption.

⑰ **MUTE**
- to interrupt or resume sound reproduction.

⑱ **NIGHT (Dolby Digital mode only)**
- to optimize the dynamic of the sound output.

⑲ **DIM**
- to select different brightness for the display screen.

⑳ **SLEEP**
- to set the sleep (auto-off) timer function.

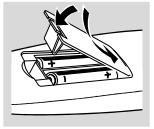
㉑ **SUBW +/–**
- to adjust the subwoofer's level.

REAR +/–
- to adjust the rear speakers' level.

CENTER +/–
- to adjust the center speaker's level.

TV +/–
- to adjust Philips's television volume level.

Inserting batteries into the remote control



1 Open the battery compartment.

2 Place the batteries in the compartment with the correct polarity as indicated by "+" and "–" symbols.

3 Close the cover.

CAUTION!

– Remove batteries if they are exhausted or will not be used for a long time.

– Do not use old and new or different types of batteries in combination.

– Batteries contain chemical substances, so they should be disposed off properly.

Switching on the system

IMPORTANT!

Make sure you have completed all the necessary connections. (See page 10 "Connecting TV")

1 Press **STANDBY ON** to switch on the system.

2 Press **SOURCE** until "DISC" appears on the display panel (or press **DISC** on the remote).

3 Turn on the TV and set to the correct video-in channel. You should see the blue Philips DVD background screen on the TV.

➜ Usually this channel is between the lowest and highest channels and may be called FRONT, A/V IN, or VIDEO. See your TV manual for more details.

➜ Or, you may go to channel 1 on your TV, then press the Channel down button repeatedly until you see the Video In channel.

➜ Or, the TV remote control may have a button or switch that chooses different video modes.

➜ Or, set the TV to channel 3 or 4 if you are using an RF modulator.

– If you do not get a proper picture or sound, please refer to "System Setup (DVD)" in order to change the pre-settings as necessary to accommodate your TV system or change to your preferred settings.

Preparations

System Setup (DVD)

The system setup is carried out via the TV, it enables you to customize the DVD system to suit your particular requirement. If the preferred options selected are not available on a disc, then the disc's own preference will be used.

IMPORTANT !

To access the System Setup menu, playback must be stopped.

The default setting is underlined.

General operation

1 Press **SYSTEM MENU**.

➜ icon will be highlighted in the menu bar on the TV screen.

2 Press ▼ to activate the System Setup menu.

3 Use ◄ / ►, ▲ / ▼ keys to toggle through the functions and select your preferred option.

4 Press **OK** to confirm a highlighted selection.

5 Press **OK** or ◄ / ► /▲/▼ to quit menu to super menu. To exit the System Setup menu, press **SYSTEM MENU** or **OK**.

Setting the picture

– TV Shape

Select the aspect ratio of the TV to be connected.

4:3 PS (Pan and Scan mode)

– If you have a conventional TV set and your DVD is not formatted for widescreen viewing, use this setting. A wide picture is displayed on the whole TV screen with a portion automatically cut off.

4:3 LB (Letterbox mode)

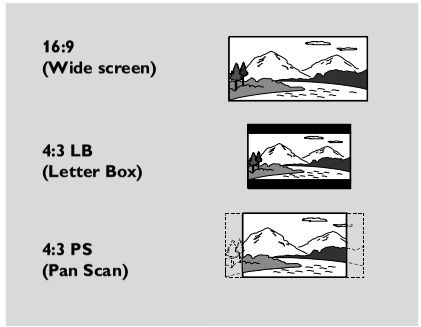
– If you have a conventional TV set and your DVD is formatted for widescreen viewing, use this setting. A wide picture with bands displayed on the upper and lower portions of the TV screen.

16:9 (Wide screen mode)

– If you have a widescreen TV set, use this setting (you must also set your widescreen TV to "full size") available on a disc, then the disc's own preference will be used.

Notes:

The format you select must be available on the disc. If it is not, the setting for TV Shape will not affect the picture during playback.



– TV System

Allows you to select the color system matching the connected TV set.

AUTO

– If the connected TV is multi system, select this mode. The output format will be in accordance with the video signal of the disc.

NTSC

– If the connected TV is NTSC system, select this mode. It will change the video signal of a PAL disc and output in NTSC format.

PAL

– If the connected TV is PAL system, select this mode. It will change the video signal of a NTSC disc and output in PAL format.

– Video Out

Video out selection enables you to choose the type of video output suitable for your DVD system.

PR PBY / SCART

– Select **PR PBY / SCART** if you have connected the video output to your TV using SCART jack.

S-VIDEO

– Select **S-VIDEO** if you have connected the S-VIDEO output to your TV using S-VIDEO jack.

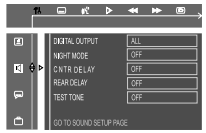
Note:

– You do not need to adjust the video output setting if you are using VIDEO jack (yellow) to connect the DVD system to your TV.

– Screen Saver

If set to ON, when you leave the system in stop or pause mode for more than five minutes, the screen saver will be activated. The default setting is ON.

Setting the sound



– Digital Output

Digital output selection enables you to specify the type of digital output suitable for your amplifier or receiver.

- Select **ALL** if you have connected the digital output (COAXIAL or OPTICAL) to a multichannel decoder receiver.
- Select **PCM 96K** if the external components is capable of processing digital signal input with sampling rates of 96 kHz.
- Select **PCM 48K** if the external components is incapable of processing 96 kHz digital signal input, then convert to standard signal with sampling rates of 48 kHz.
- Select **OFF** to deactivate the digital output (COAXIAL or OPTICAL).

– Night mode

Set night mode to on to level out the volume. For example, the disc will play at the same sound level throughout the movie. The default setting is OFF.

Night function can also be accessed via the remote control.

Off

Select this when you want to enjoy the surround sound with its full dynamic range.

On

Select this to level out the volume. High volume outputs will be softened and low volume outputs are brought upward to audible level. This feature is only available for movies with Dolby Digital mode.

– Center Delay

If the listening position is closer to the center speaker than the front speakers, you can set the center delay time to improve the surround sound effect.
Options : 5ms, 3ms, 2ms, 1ms or OFF .

– Rear Delay

If the listening position is closer to the rear surround speakers than the front speakers, you can set the rear delay time to improve the surround sound effect.
Options : 15ms, 12ms, 9ms, 6ms, 3ms or OFF..

– Test Tone (DISC mode only)

If set to ON, the system will test the speaker settings. The test signal is generated through the left, center, right, and rear (surround) speakers. The default setting is OFF.

Preparations

Setting the language

– Audio
– Subtitle
– Disc Menu

- This is to select the audio language, subtitle language and the language used on TV screen menus or DVD menus which will always be used for every disc to be played back. The default setting is English.
- If the language selected is not available on the disc, the original language designated by each disc will be selected.

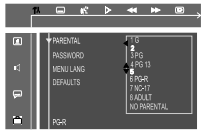
Setting the features

– Parental

Enables setting of playback limitation level. Some DVDs may have a parental level assigned to the complete disc or to certain scenes on the disc, the rating levels are from 1 to 9 and are country dependent. You can prohibit the playing of certain discs which are not suitable for your children or to have certain discs played with alternative scenes.

The parental default initial setting is 6 PG-R .

1 Enter the 4-digit code. If necessary, enter the code a second time.
2 Use ▲ / ▼ keys select a rating level.



3 Press **OK** to confirm.

Rating - NO PARENTAL

Parental control is not activated, it will play all discs.

Rating - 1 to 9

If the player's parental level is set below 9, only discs with a lower or equal level will play. For example, if the player is set to 5, only discs with ratings of 5, 4, 3, 2 and 1 will be played. Higher rated scenes will not be played unless an alternative which has the same rating or lower is available on the disc. For example, consider a disc that generally is suitable for most audiences, and it is rated at level 2 for the most part. However, in the middle, there are also scenes rated at 5 (not suitable for children).

NO PARENTAL – It will play all discs.

8 ADULT – Mature material; should be viewed only by adults due to graphic sexual material, violence, or language.
7 NC-17 – No children under age 17; not recommended viewing for children under age 17.
6 PG-R – Parental Guidance - Restricted; recommended that parents restrict children under 17 from viewing or allow to view only when supervised by a parent or adult guardian.
4 PG13 – Material is unsuitable for children under age 13.
3 PG – Parental Guidance suggested.
1 G – General Audience; recommended as acceptable for viewers of all ages.

To play a higher rated disc or scene than the level set

Enter the 4-digit code before resetting the rating level to a higher number (go to "Password").

If you forget the 4-digit code

1 Press ■ four times when forgotten the password and the system will change back to the default password.
2 Go to "Password" and enter your new code.

Notes:

– Some DVDs are not encoded with a rating though the movie rating is printed on the disc jacket. The rating level feature does not work for such discs.

– Password

To set a new password for the parental control or to change the password. The password supplied as default is 1234.

– Menu Language

Select the language for on screen display.

– Default

If RESET is selected, all the items in the setup menu will be reset to default setting, except Parental Setting.

Care and safety information

Avoid high temperatures, moisture, water and dust.

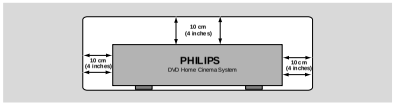
– Do not expose the system, batteries or discs to humidity, rain, sand or excessive heat (caused by heating equipment or direct sunlight.) Always keep the disc tray closed to avoid dust on the lens.

Avoid condensation problem

– The lens may cloud over when the player is suddenly moved from cold to warm surroundings, making it impossible to play a disc. Leave the player in the warm environment until the moisture evaporates.

Do not block the vents

– Do not operate the DVD system in an enclosed cabinet, allow about 10 cm (4 inches) of free space all around the player for adequate ventilation.



Care of disc

– To clean a CD, wipe it in a straight line from the center towards the edge using a soft, lint-free cloth. A cleaning agent may damage the disc.

– Write only on the printed side of a CDR(W) and only with a soft felt-tipped pen.

– Handle the disc by its edge, do not touch the surface.

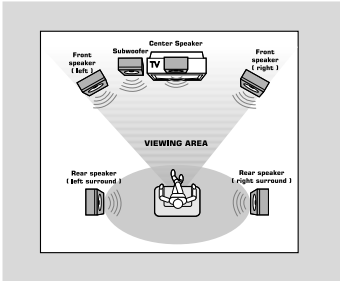
Care of cabinet

– Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Finding a suitable location

– Place the player on a flat, hard, and stable surface.

Step 1: Placing the speakers and subwoofers



For best possible surround sound, all the speakers (exept subwoofer) should be placed at the same distance from the listening position.

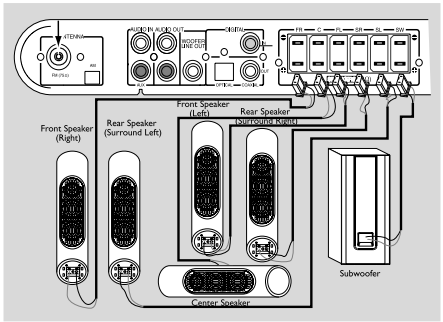
① Place the front left and right speakers at equal distances from the TV and at an angle of approximately 45 degrees from the listening position.
② Place the centre speaker above the TV or the DVD system so the centre channel's sound is localized.
③ Place the surround speakers at normal listening ear level facing each other.
④ Place the subwoofer on the floor near the TV.

Notes:

– To avoid magnetic interference, do not position the front speakers too close to your TV.

– Allow adequate ventilation around the DVD system.

Step 2: Connecting speakers and subwoofer



Connect the supplied speaker system using the supplied speaker cables by matching the colours of the jacks and speaker plugs. Fully insert the plugs of speaker wire into the jacks on the DVD system.

Speakers / Subwoofer	⊖	⊕
Front Left (L)	black	white
Front Right (R)	black	red
Center	black	green
Surround (Rear) Left (L)	black	blue
Surround (Rear) Right (R)	black	grey
Subwoofer	black	purple

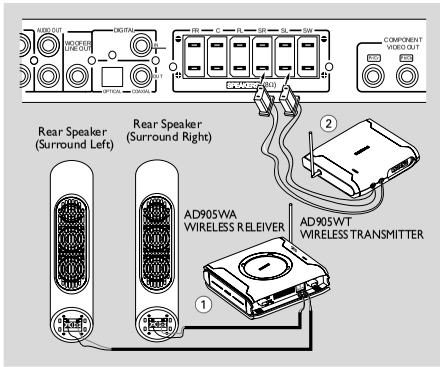
Notes:

– Ensure that the speaker cables are correctly connected. Improper connections may damage the system due to short-circuit.

– Do not connect more than one speaker to any one pair of +/- speaker jacks.

– Do not connect speakers with an impedance lower than the speakers supplied. Please refer to the SPECIFICATIONS section of this manual.

Step 3: Connecting AD905W Wireless System (Only for LX3750W)



① Connect the supplied Surround Speaker system using the supplied speaker cables to the speaker jacks on the **AD905WA WIRELESS RECEIVER** by matching the colours of the jacks and speaker plugs. Extend the RECEIVER antenna.

② Connect the **AD905WT WIRELESS TRANSMITTER**'s speaker cables to the speaker jacks on the DVD system. Extend the TRANSMITTER antenna.

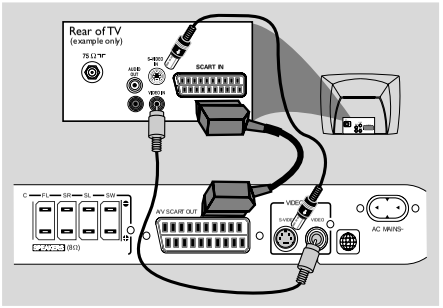
Notes

– Adjust the position of the antennas for optimal reception.

– Position the antennas as far as possible from your TV, VCR or other radiation sources to prevent unwanted interference.

– To prevent unwanted noise, do not place the AD905W wireless system too close to the DVD system, AC power adapter, TV or other radiation sources.

Step 4: Connecting TV



IMPORTANT!

– You only need to make one video connection from the following options, depending on the capabilities of your TV system.

– Connect the DVD system directly to the TV.

– Scart Video connection provides higher picture quality. This option must be available on your TV.

– S-Video connection provides better picture quality. This option must be available on your TV.

Using Scart jack

- Use the scart video cable (black) to connect the DVD system's **A/V SCART OUT** jack to the corresponding Scart input jack on the TV.

OR

Using Composite Video jack (VIDEO)

- Use the composite video cable (yellow) to connect the DVD system's **VIDEO** jack to the video input jack (or labelled as A/V In, Video In, Composite or Baseband) on the TV.

OR

Using S-Video jack

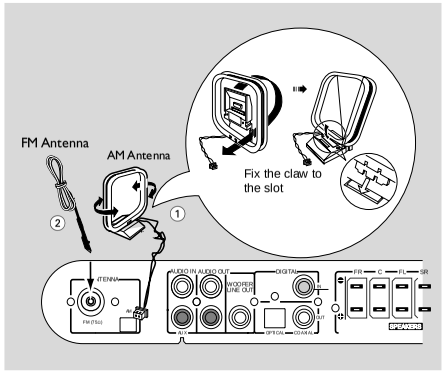
- Use the S-video cable (not supplied) to connect the DVD system's **S-VIDEO** jack to the S-Video input jack (or labelled as Y/C or S-VHS) on the TV.

If your TV is not equipped with a SCART

- To hear the TV channels through this DVD system, use the audio cables (white/red) to connect **AUDIO IN-AUX** jacks to the corresponding **AUDIO OUT** jacks on the TV.

Before starting operation, press **AUX/DI** on the remote to select "AUX-ANA" in order to activate the input source.

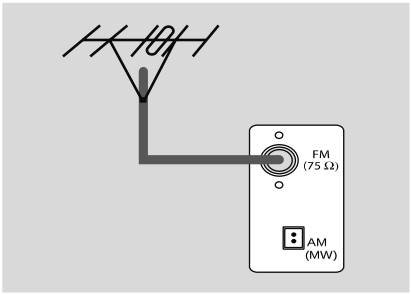
Step 5: Connecting FM/MW antennas



① Connect the supplied **MW** loop antenna to the **MW** jack. Place the **MW** loop antenna on a shelf or attach it to a stand or wall.

② Connect the supplied **FM** antenna to the **FM** jack. Extend the FM antenna and fix its ends to the wall.

For better FM stereo reception, connect an external FM antenna (not supplied).



Notes:

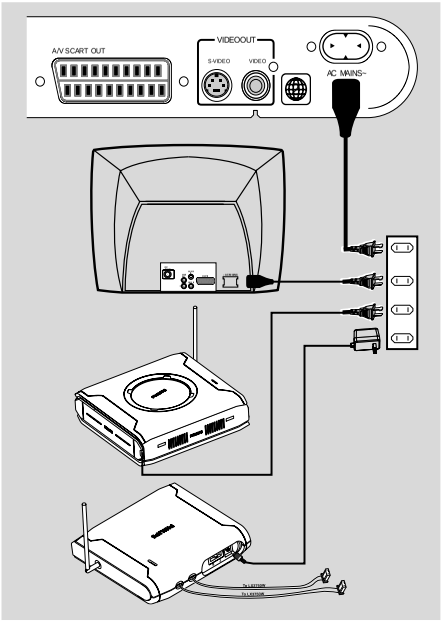
– Adjust the position of the antennas for optimal reception.

– Position the antennas as far as possible from your TV, VCR or other radiation sources to prevent unwanted interference.

Step 6: Connecting the power cord

After everything is connected properly, plug in the AC power cord to the power outlet.

Never make or change any connections with the power switched on.



IMPORTANT!

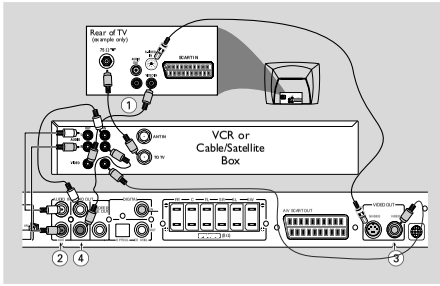
The type plate is located at the bottom of the system.

This product complies with the radio interference requirements of the European Community.

The apparatus shall not be expose to dripping or splashing and that no objects filled with liquid such as vase shall be placed on the apparatus.

To avoid overheating of the system, a safety circuit has been built in. Therefore, your system may switch to Standby mode automatically under extreme conditions. If this happens, let the system cool down before reusing it.

Step 7: Connecting a VCR or Cable /Satellite Box



Viewing and listening to the playback

① Connect the VCR or Cable/Satellite Box to the TV as shown.

② Connect the DVD system's **AUDIO IN-AUX** jacks to the **AUDIO OUT** jacks on the VCR or cable / satellite box.

Before starting operation, press **AUX/DI** on the remote to select "AUX-ANA" in order to activate the input source.

Recording DVDs

Some DVDs are copy-protected. You cannot record or dub protected discs using a VCR.

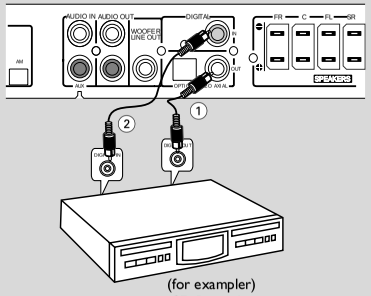
③ Connect the DVD system's **VIDEO** jack to the VIDEO IN jack on the VCR.

④ Connect the DVD system's **AUDIO OUT** jacks to the AUDIO IN jacks on the VCR. This will allow you to make analogue stereo (two channel, right and left) recordings.

To view DVD playback while recording. You must connect the DVD system to your TV using the SCART or the S-VIDEO connection.

Connections

Step 8: Connecting digital audio equipment



(for exampler)
CD Recorder

Listening to the playback

① Connect the DVD system's **DIGITAL IN** jack to the DIGITAL OUT jack on a digital audio device.

Before starting operation, press **AUX/DI** on the remote to select "AUX-DI" in order to activate the input source.

Recording (digital)

② Connect the DVD system's **DIGITAL OUT (COAXIAL or OPTICAL)** jack to the DIGITAL IN jack on a digital recording device (DTS-Digital Theatre System compatible, with a Dolby Digital decoder, for example).

Before starting operation, set the DIGITAL OUTPUT according to the audio connection. (See page 19 "Setting the Sound - Digital Output").

Notes:

– Always refer to the owner's manual of the other equipment for complete connection and use details.

Troubleshooting

WARNING!
Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty. Do not open the system as there is a risk of electric shock.

If a fault occurs, first check the points listed below before taking the system for repair. If you are unable to solve a problem by following these hints, consult your dealer or service center.

Problem	Solution
No power.	– Check if the AC power cord is properly connected.
No picture.	– Select the appropriate video input mode on the TV. – Check if the TV is switched on. – Check the video connection. – Check the system is securely connected.
Distorted or poor picture.	– Sometimes a small amount of picture distortion may appear. This is not a malfunction. – Clean the disc. – Connect the system to TV's S-video input.
The aspect ratio of the screen cannot be changed even though you have set the TV shape.	– The aspect ratio is fixed on the DVD disc. – Depending on the TV, it may not allow to change the aspect ratio.
No sound or distorted sound.	– Adjust the volume. – Check that the speakers are connected correctly. – Replace the speaker cables. – Check the speaker settings. – The system is in pause, slow motion or fast forward/reverse mode, press PLAY to resume normal play mode.
No sound is heard from the center or rear speakers.	– Use the CENTER +/– or REAR +/– to adjust the volume level. – Check that the center or rear surround speakers is connected correctly. – Use surround mode.
The DVD player does not start playback.	– Insert a readable disc. – Check the disc type, color system and region code. – Clean the disc. – Place the disc with the playback side down. – Press SYSTEM MENU to turn off the setup menu screen. – Cancel the parental control rating function or change the rating level. – Moisture has condensed inside the system. Remove the disc and leave the system turned on for about an hour.
The DVD system does not respond when the buttons are pressed.	– Disconnect the power plug from the outlet, and insert again.
The language for the sound or subtitle cannot be changed when playing a DVD.	– Multi-language sound or subtitle is not recorded on the DVD. – Changing the language for the sound or subtitle is prohibited on the DVD.
No image is output when a function is selected.	– Make sure the component is connected correctly. – Press the correct function button for the input source.
Considerable noise in radio broadcasts.	– Tune in the correct frequency. – Connect the antenna. – Route RF (AC-3) and digital cables away from the antenna terminals and wires. – Fully extend the FM wire antenna. Position for best reception and secure to a wall. – Connect an outdoor FM antenna. – Adjust the direction and position for best reception. – Connect an additional or external AM antenna. – Turn off the equipment causing the noise or move it away from the DVD system. – Place the antenna farther away from the equipment causing the noise.
The remote control does not function.	– Point the remote control at the remote sensor of the unit. – Reduce the distance to the player. – Remove any possible obstacles. – Replace the batteries with new ones. – Check that the batteries are loaded correctly.
The display is dark.	– Press DIM again.
Low hum or buzz sound.	– Place the DVD system as far away as possible from electric devices with interference.
Low bass response.	– Check all speakers for correct polarity.

AD905W Wireless System (Only for LX3750W)

The **AD905W** accessory gives you the option for wireless speaker connection.
Please check you have all the supplied parts for your **AD905W** wireless set:

- 1 x **AD905WT WIRELESS TRANSMITTER**
- 1 x **AD905WA WIRELESS RECEIVER**
- 1 x 14V adapter
- 1 x table stand

1 Remove the PHILIPS cover from the **AD905WA WIRELESS RECEIVER** as shown in **Fig.** ①, to access the connection terminal. Connect your rear speaker terminals with the corresponding color terminals on the **AD905WA WIRELESS RECEIVER**

2 Insert the table stand into the brackets as shown in **Fig.**②**.**

3 Connect the **AD905WA WIRELESS RECEIVER** power cord to your power supply.

4 Check / adjust the **AD905WA WIRELESS RECEIVER OFF-ON** switch to the **ON** position (see **Fig.**①).
➜ The **AD905WA WIRELESS RECEIVER** power indicator lights up green.

5 Connect the 14V power adapter to the **AD905WT WIRELESS TRANSMITTER** and power supply as shown in **Fig.** ③**.**

6 Make sure you position both the **AD905WT WIRELESS TRANSMITTER** and **AD905WA WIRELESS RECEIVER** at least 2 meters apart.

7 Connect and carefully match the **AD905WT WIRELESS TRANSMITTER** inputs to the corresponding surround speaker jacks on your **LX3750W** DVD system.
➜ The **AD905WT WIRELESS TRANSMITTER** power indicator lights up red.

8 Check and adjust the 4-channel toggle switch on the **AD905WT WIRELESS TRANSMITTER** and **AD905WA WIRELESS RECEIVER** (**CHANNEL SELECTOR** switch), so that both units are using the same channel.

9 On your **LX3750W** DVD system, play an audio source and activate the surround sound mode option. Adjust the volume to reproduce surround sound in the rear speakers.

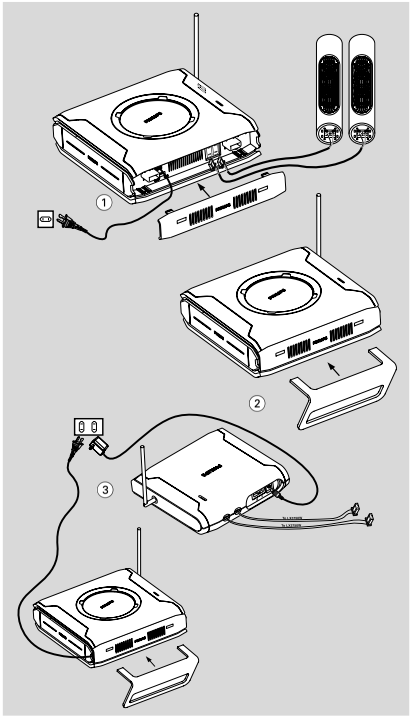
10 Extend the antenna vertically on both the **AD905WT WIRELESS TRANSMITTER** and **AD905WA WIRELESS RECEIVER** to improve reception. Check the antennas are safely positioned without obstruction.

To ensure quality sound production and transmission

- Place both the **AD905WT WIRELESS TRANSMITTER** and **AD905WA WIRELESS RECEIVER** off the ground (recommended minimum height of 30cm).
- Avoid placing the **AD905WT WIRELESS TRANSMITTER** too close to your DVD receiver, AC power adapter, TV or other electrical equipment as it may cause electrical interference.
- In case of sound distortion, please select another channel for both the **AD905WA WIRELESS RECEIVER** and **AD905WT WIRELESS TRANSMITTER.** The distortion could be the result of interference caused by other equipment using same frequency channel in your house or neighbourhood.

Notes

*– After you switch off your DVD system, the **AD905WT WIRELESS TRANSMITTER** automatically enters standby mode and the red power indicator eventually comes out. On receiving an incoming audio signal from your DVD system again, the **AD905WT WIRELESS TRANSMITTER** automatically powers up.*
*– When the **AD905WA WIRELESS RECEIVER** enters the Eco-power standby mode, the power indicator lights up red.*



System, Region code, Tuner, etc. setting procedure

1) System Reset

a) Press "SYSTEM" button on R/C. TV show "SETUP"
b) Select the menu using the "▼" and "►" button on R/C
c) Go feature setup page to do system reset

2) Region Code Change

After replacement / repair of the MPEG board, the customer setting and the region code may lost. Changing the Region code will put the player back in the state which it has left the factory.

Region Code
- 1 USA
- 2 EU, UK
- 3 AP
- 4 Australia, NZ, Latam
- 5 RUSSIA, INDIA
- 6 CHINA

TV System
- 1 NTSC
- 2 PAL
- 3 AUTO

Menu/ Audio Subtitle (AS) Language
- 1 English
- 2 English
- 3 English
- 4 English

AFS
- 001 LX3000D/LX3500D
- 002 MX3600D/MX3700D/MX3800/MX3550D
- 003 LX3700D/LX3750W

oem derivative
- 08

- region code = 1 digit
- tv system = 1 digit
- "as/menu lang" = 1 digit
- "AFS" = "architechture Feature Set" = 3 digits

This field is used to define the architecture / features sets for each product.

- "oem derivative" = 2 digit

This field is use to define the OEM set. This will affect the background display.

Hence in total, reprograming will be done by way of the remote control. It should run as below :-

a) Put the player in stop mode. No disc loaded.
b) Press the following key on remote control:

For LX3700D/22S (Europe)
<PLAY> <159> <221> <003> <08> PLAY

For LX3700D/21S (AU/NZ)
<PLAY> <159> <421> <003> <08> PLAY

For LX3700D/25S (UK)
<PLAY> <159> <221> <003> <08> PLAY

For LX3750W/37 (USA)
<PLAY> <159> <111> <003> <08> PLAY

✱ After the Region Code is changed it is necessary to reset the system so that the new Region Code will be fully effective. All customer setting will be lost.

✱ On top of the maximum number of times allowed for changing the region code is changed to 25.

✱ When the counter reach 25, you will not be able to further change the code until you reset the timer by the Region Code timer reset procedure

CAUTION !

This information is confidencial and may not be distributed. Only a qualified service person should reprogram the Region Code.

3) Region code change timer reset

Press below key to reset the timer :
a) In DISC source, stop mode and no disc in tray.
b) Press R/C "Play -159-PLAY" to reset timer to 25

4) Tuner area change

a) Press the "OPEN/CLOSE" button to openthe set's door
b) Press "1" "5" "9" button by using R/C.
c) TV Show "TUNER AREA ADJUST"
d) Select the tuner area you want by using the "▼" and "►" button on R/C, then press "OK" to confirm. TV show " TUNER AREA CHANGED"
If you didn't press it in five seconds, the system will remain original status.

AREA	BAND	FREQUENCY (Hz)		STEP(Hz)
USA	FM	87.5M	108M	100K
	AM	530K	1700K	10K
APAC	FM	87.5M	108M	50K
	AM	531K	1602K	9K
EUROPE	FM	87.5M	108M	50K
	AM	531K	1602K	9K
LATAM	FM	87.5M	108M	50K
	AM	530K	1710K	10K
AUSTRALIA / NZ	FM	87.5M	108M	50K
	AM	531K	1602K	9K

Note :-
(a) Please refer to the above different tuner area.

5. Video Out Change

a) Press "SYSTEM" on R/C button
b) Select the menu using the "▼" and "►" button on R/C
c) Go picture setup page select Video out item.

6. Password Change

a) Press "SYSTEM" on R/C button
b) Select the menu using the "▼" and "►" button on R/C
c) Go feature setup page select "PASSWORD". TV show "ENTER CODE". Press 4 times of "STOP" button on R/C.
d) Select "PARENTAL" "8 ADULT" on TV.
e) Enter PASSWORD to "1234"
✱ "1234" is a default password supplied.

7. Checking on the Software version

a) Open the CD door.
b) Press "123" and "OK" on the remote control.
c) TV will show the version on screen.

8. Upgrading new software

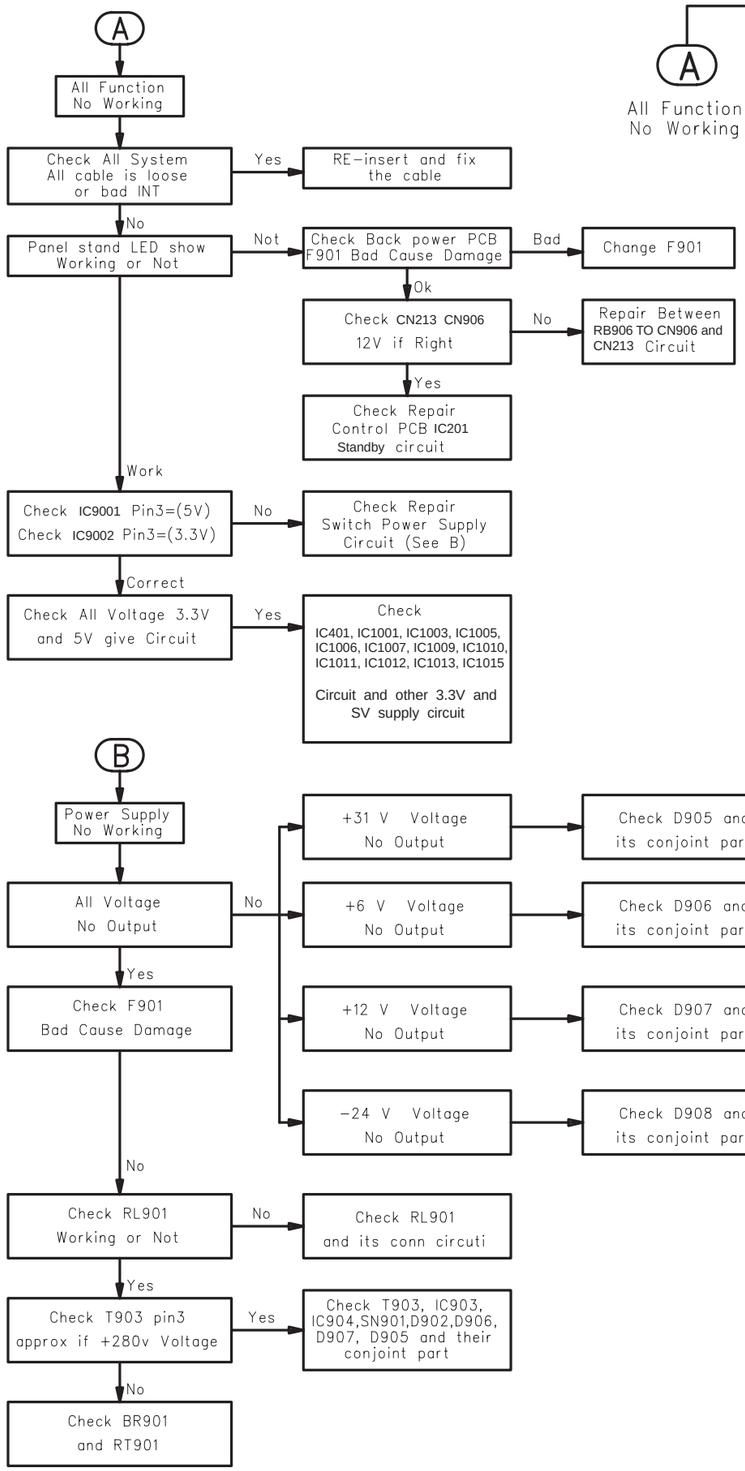
a) Open the CD-door, then insert the CD-R program disc.
b) Close the CD-door.
c) TV will show:-
- "disc loading"
- "bank30.rom"
- "writing" about 6 seconds.
- "Done"

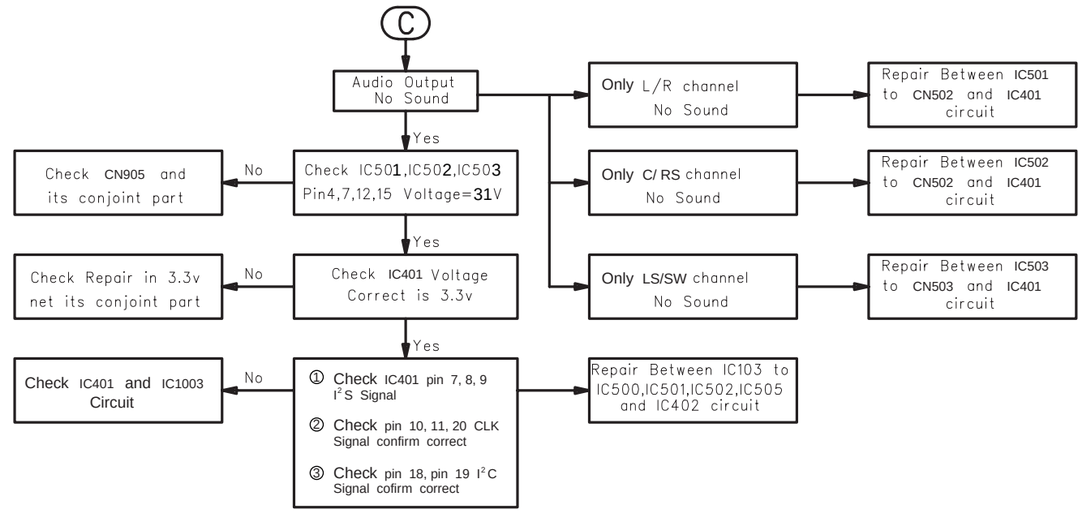
2-2

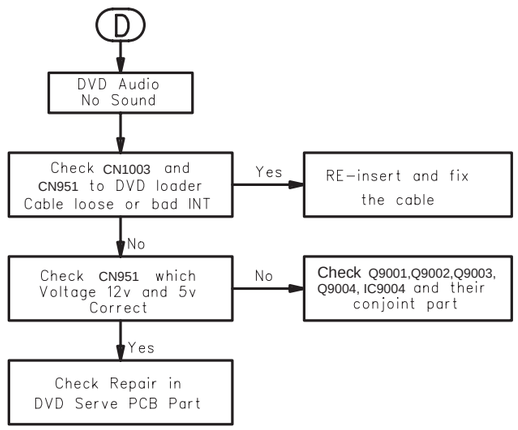
REPAIR INSTRUCTION

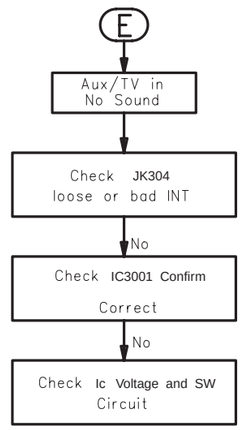
MAIN UNIT REPAIR CHART

- A — All Function No Working
- B — Power Supply No Working
- C — Audio Output No Sound
- D — DVD Audio No Output
- E — Aux/TV in No Sound
- F — Tuner No Output
- G — Ear Head Phone No Sound
- H — Audio Line No Output
- I — Subwoofer Line No Output
- J — Digital Line No Output


A
All Function No Working
Check All System All cable is loose or bad INT
Yes
RE-insert and fix the cable
No
Panel stand LED show Working or Not
Not
Check Back power PCB F901 Bad Cause Damage
Bad
Change F901
Ok
Check CN213 CN906 12V if Right
No
Repair Between RB906 TO CN906 and CN213 Circuit
Yes
Check Repair Control PCB IC201 Standby circuit
Work
Check IC9001 Pin3=(5V) Check IC9002 Pin3=(3.3V)
No
Check Repair Switch Power Supply Circuit (See B)
Correct
Check All Voltage 3.3V and 5V give Circuit
Yes
Check IC401, IC1001, IC1003, IC1005, IC1006, IC1007, IC1009, IC1010, IC1011, IC1012, IC1013, IC1015
Circuit and other 3.3V and SV supply circuit
B
Power Supply No Working
All Voltage No Output
No
+31 V Voltage No Output
Check D905 and its conjoint part
+6 V Voltage No Output
Check D906 and its conjoint part
+12 V Voltage No Output
Check D907 and its conjoint part
−24 V Voltage No Output
Check D908 and its conjoint part
Yes
Check F901 Bad Cause Damage
No
Check RL901 Working or Not
No
Check RL901 and its conn circuti
Yes
Check T903 pin3 approx if +280v Voltage
Yes
Check T903, IC903, IC904,SN901,D902,D906, D907, D905 and their conjoint part
No
Check BR901 and RT901

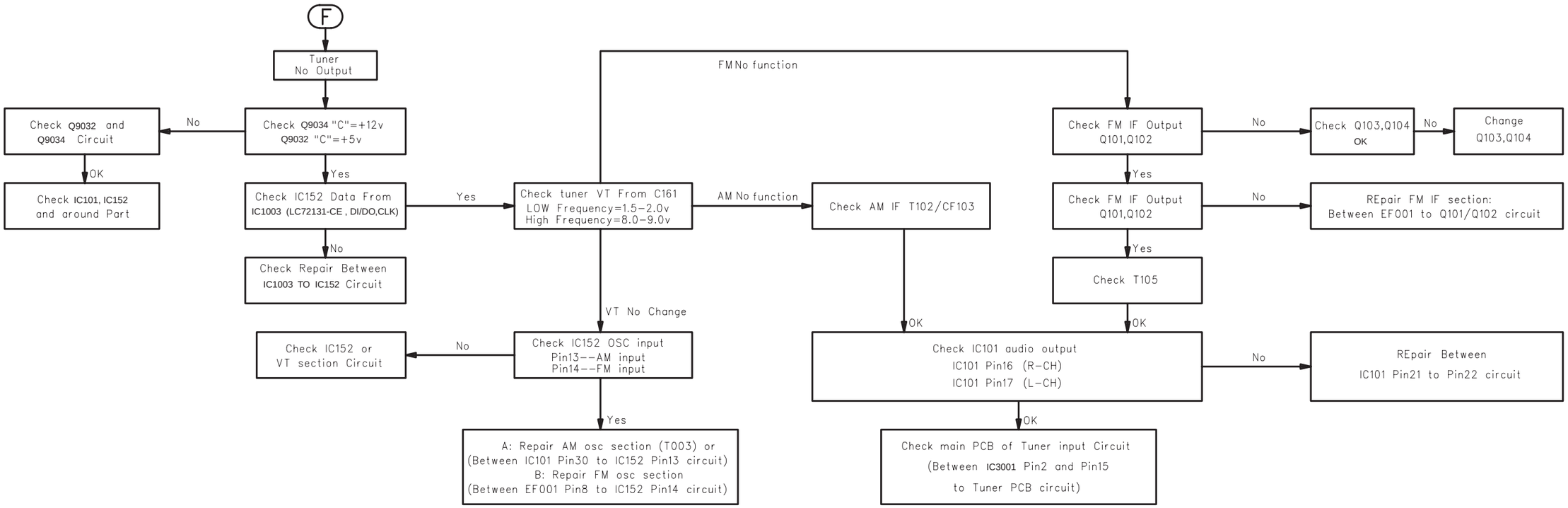

C
Audio Output No Sound
Only L/R channel No Sound
Repair Between IC501 to CN502 and IC401 circuit
Only C/RS channel No Sound
Repair Between IC502 to CN502 and IC401 circuit
Only LS/SW channel No Sound
Repair Between IC503 to CN503 and IC401 circuit
Yes
Check IC501,IC502,IC503 Pin4,7,12,15 Voltage=31V
No
Check CN905 and its conjoint part
Yes
Check IC401 Voltage Correct is 3.3v
No
Check Repair in 3.3v net its conjoint part
Yes
① Check IC401 pin 7, 8, 9 I²S Signal
② Check pin 10, 11, 20 CLK Signal confirm correct
③ Check pin 18, pin 19 I²C Signal cofirm correct
No
Check IC401 and IC1003 Circuit
Repair Between IC103 to IC500,IC501,IC502,IC505 and IC402 circuit

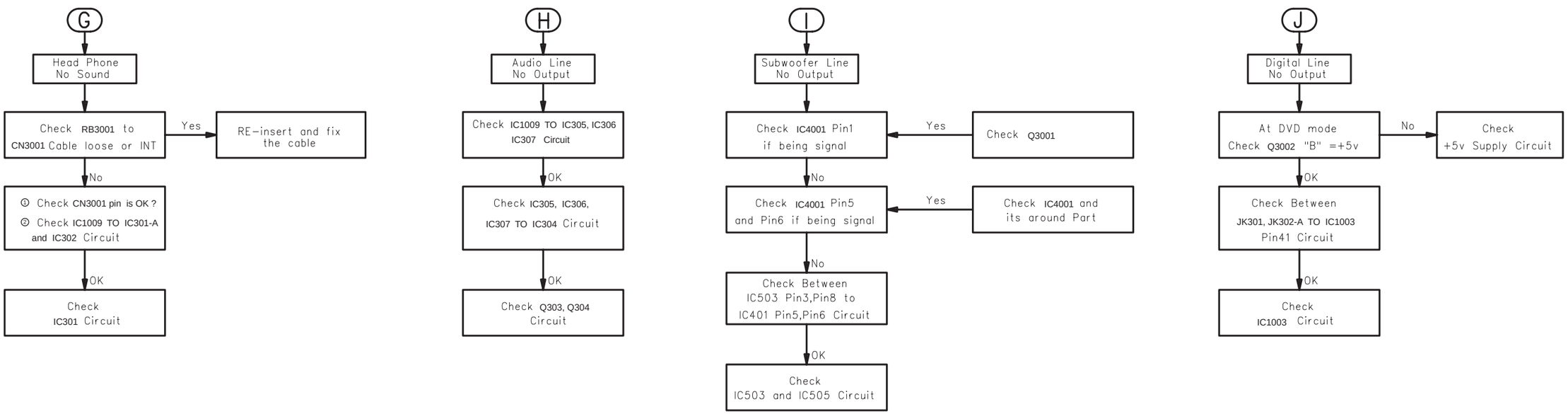

D
DVD Audio No Sound
Check CN1003 and CN951 to DVD loader Cable loose or bad INT
Yes
RE-insert and fix the cable
No
Check CN951 which Voltage 12v and 5v Correct
No
Check Q9001,Q9002,Q9003, Q9004, IC9004 and their conjoint part
Yes
Check Repair in DVD Serve PCB Part



2-3

REPAIR INSTRUCTION





DISASSEMBLY INSTRUCTIONS

Dismantling of the Front Panel Assembly

1) Open the DVD Tray by using the Open/Close Button while the Set is ON and disconnect the mains supply after removing the Tray Cover.

   Note: If this is not possible, the DVD Tray has to be open manually.

   Take a mini screw driver about 2mm diameter and make a marking 24mm from the tip as shown in figure 2. place the set on its side, insert the mini screw driver till the marking and slide it towards the right as shown in figure1 until the Tray moves out of the Front Pael.

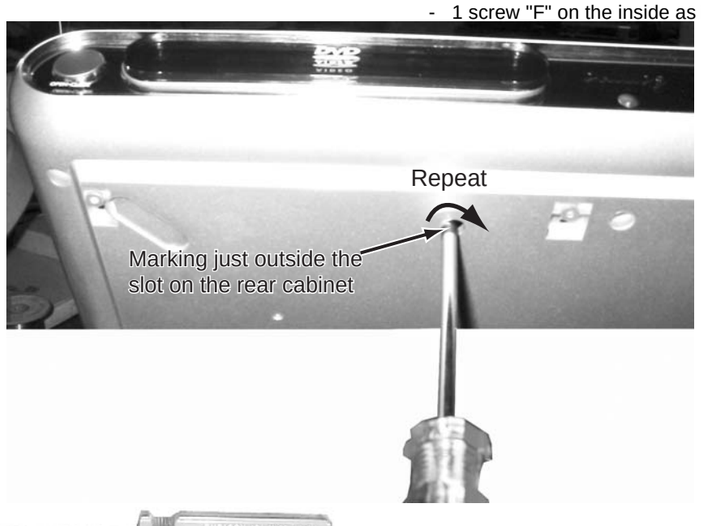


Figure 1

Figure 2

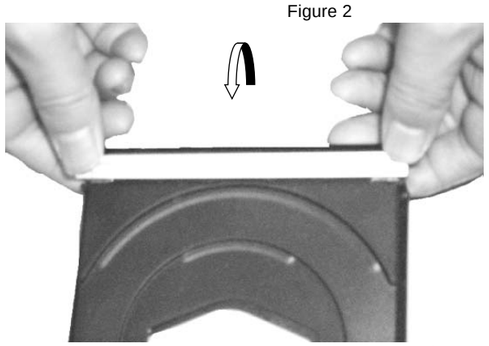


Figure 3

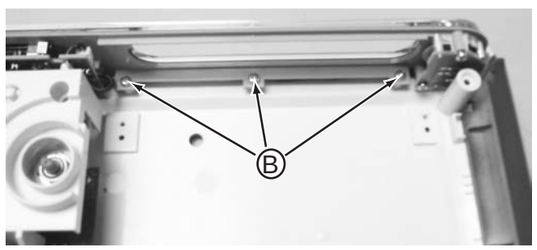


Figure 5

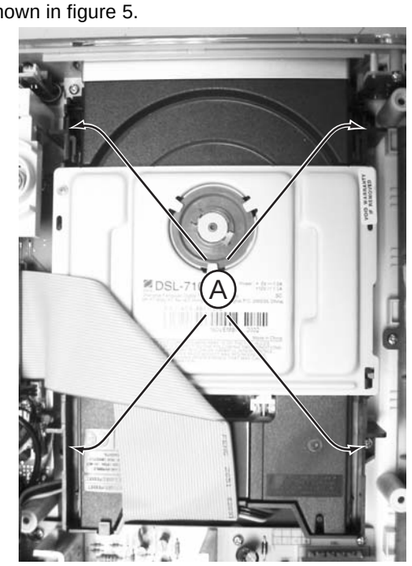
2) Return the set to its upright position and remove the Tray Cover as shown in Figure 3 and close the tray manually by pushing it back in.

3) Loosen 10 screws and remove the Top Cover by lifting the rear portion upwards before sliding it out towards the rear.
   - 10 screws on the bottom.

4) Loosen 3 screws & lift up the top edge of Front Panel assembly to free some catches before sliding it out towards the front.
   - 3 screws on the inside.
   - 1 screw "F" on the inside as indicated in Figure 5.

Dismantling of the Servo Board

1) Loosen 4 screws "A" to remove the DVD module as shown in figure 5.



Note: Do not lost the limited parts of the Servo board

Figure 4

3-1

Dismantling of the Key Board

1) Loosen 2 screws "C" at the top of the button as shown in figure 6.

2) Loosen 6 screws"D" at the top of the key board 1 as shown in figure 7.

3) Loosen 7 screws"E" on the button bottom of the key board 2 as shown in figure 8.

Figure 6

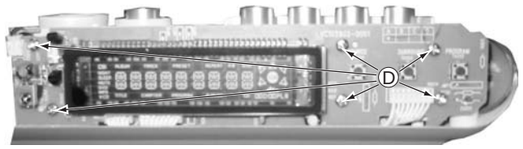


Figure 7

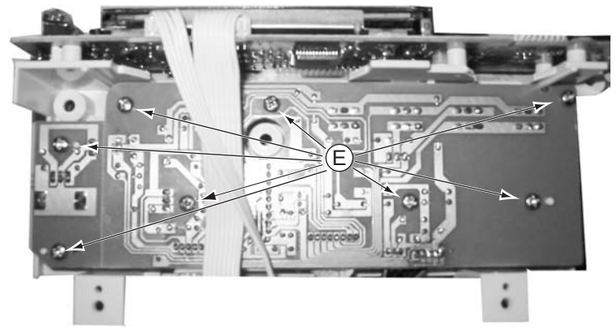


Figure 8

Dismantling of the Main Board

1) Loosen 6 screws "G" on the top of main board as shown in figure 9.

2) Loosen 4 screws "H" at the main bottom as shown in figure 10.

3) Loosen 8 screws "I" at the back panel as shown in figure 12.
(SCART : Loosen 8 screws**)**
(RGB : Loosen 9 screws**)**

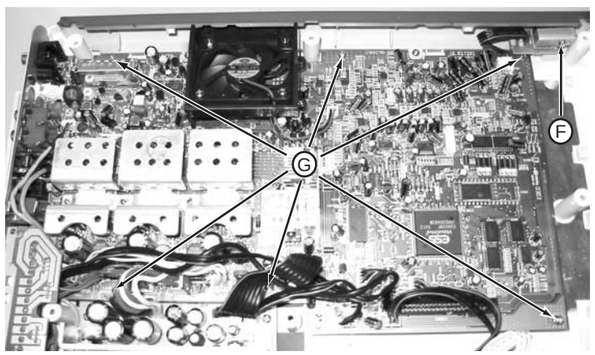


Figure 9

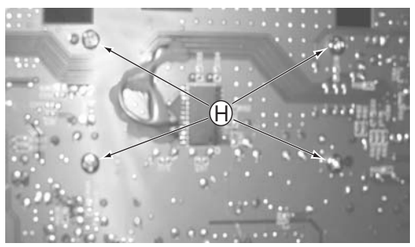
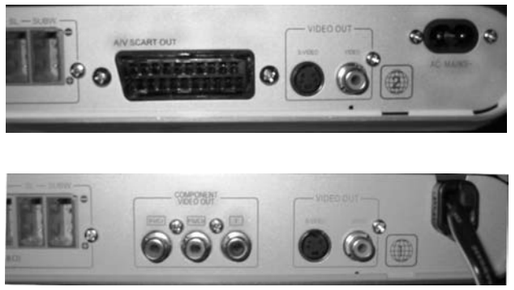


Figure 10



Scart Jack use for LX3700/22S ,/25S

RGB Jack use for LX3700/21S ,LX3750/37S

Figure 11

Figure 12

Dismantling of the Power Board

1) Loosen 6 screws "H" at the top of the Power Board as shown in figure 13

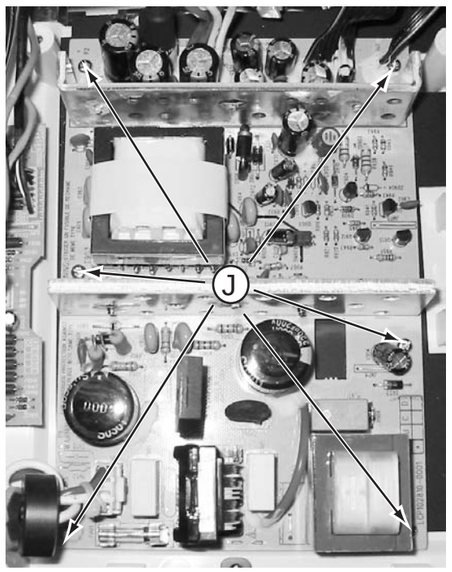
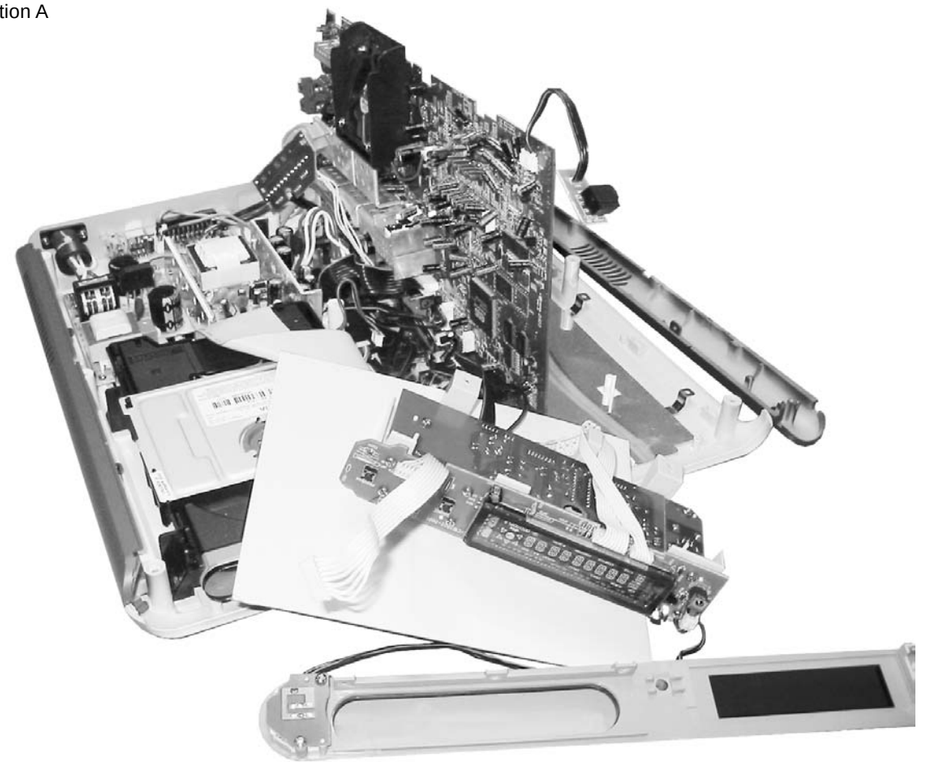


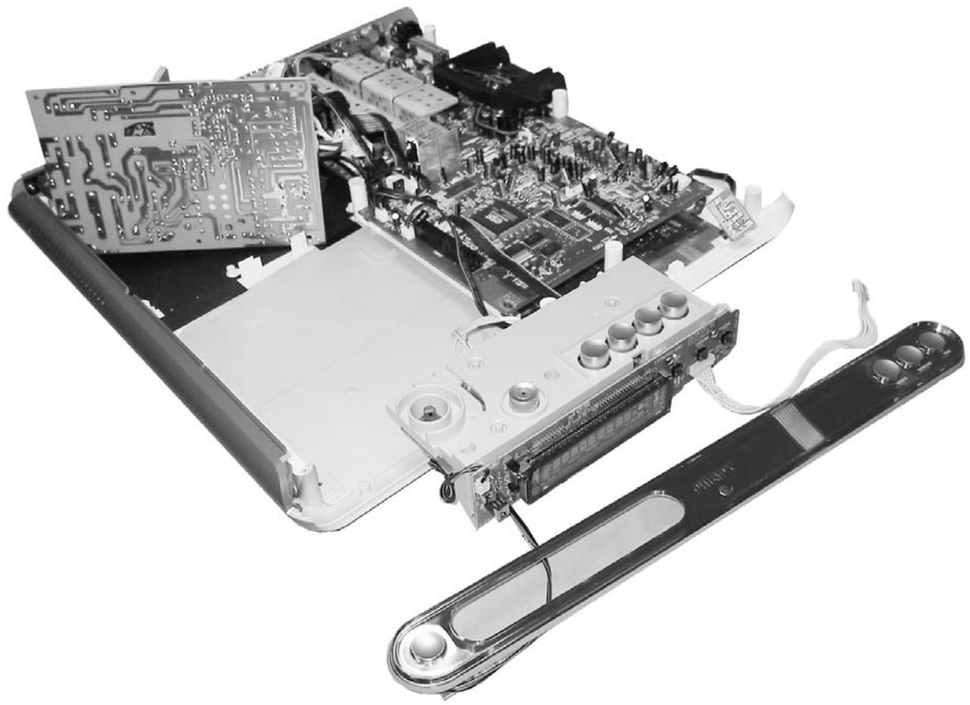
Figure 13

SERVICE POSITIONS

Service position A

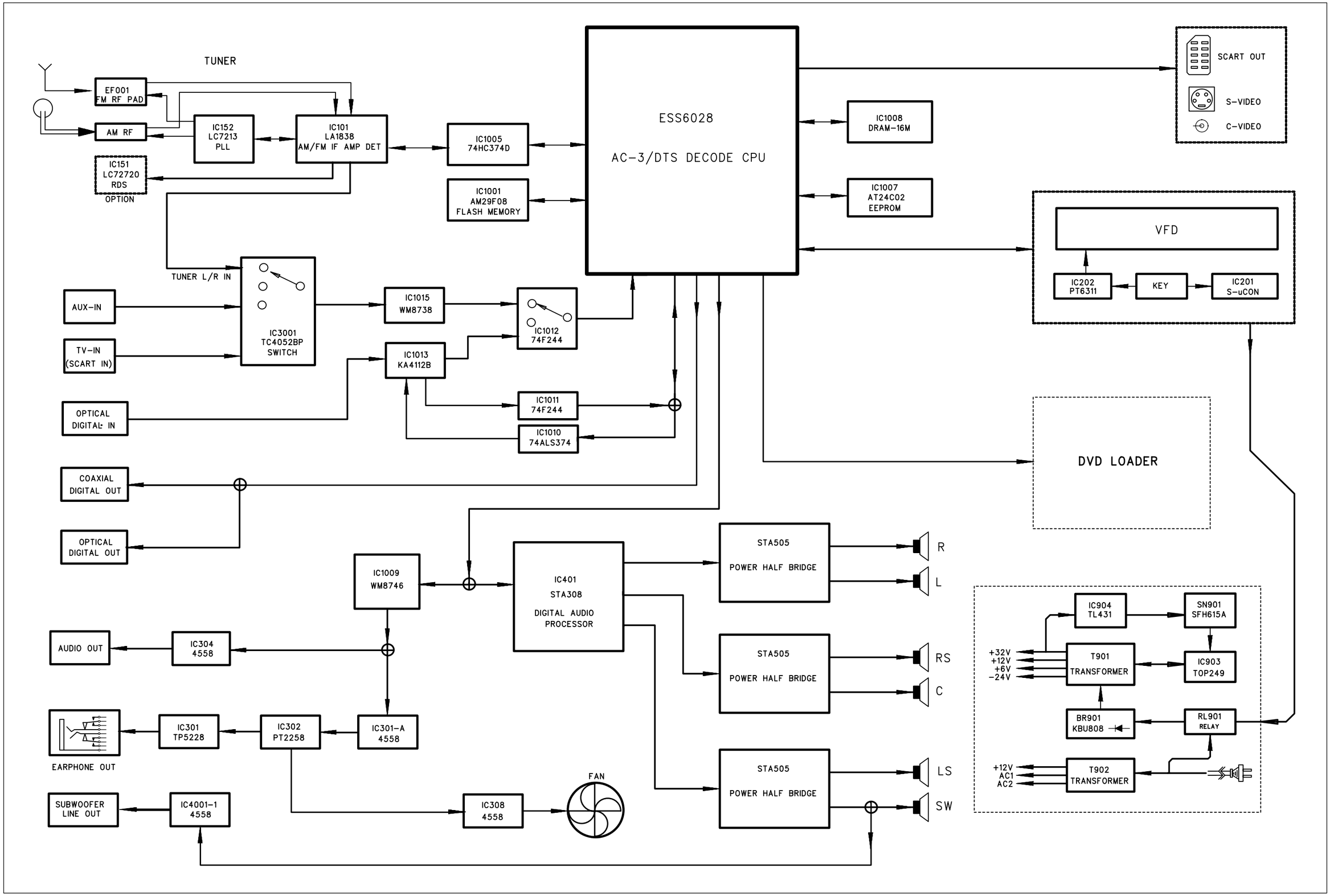


Service position B



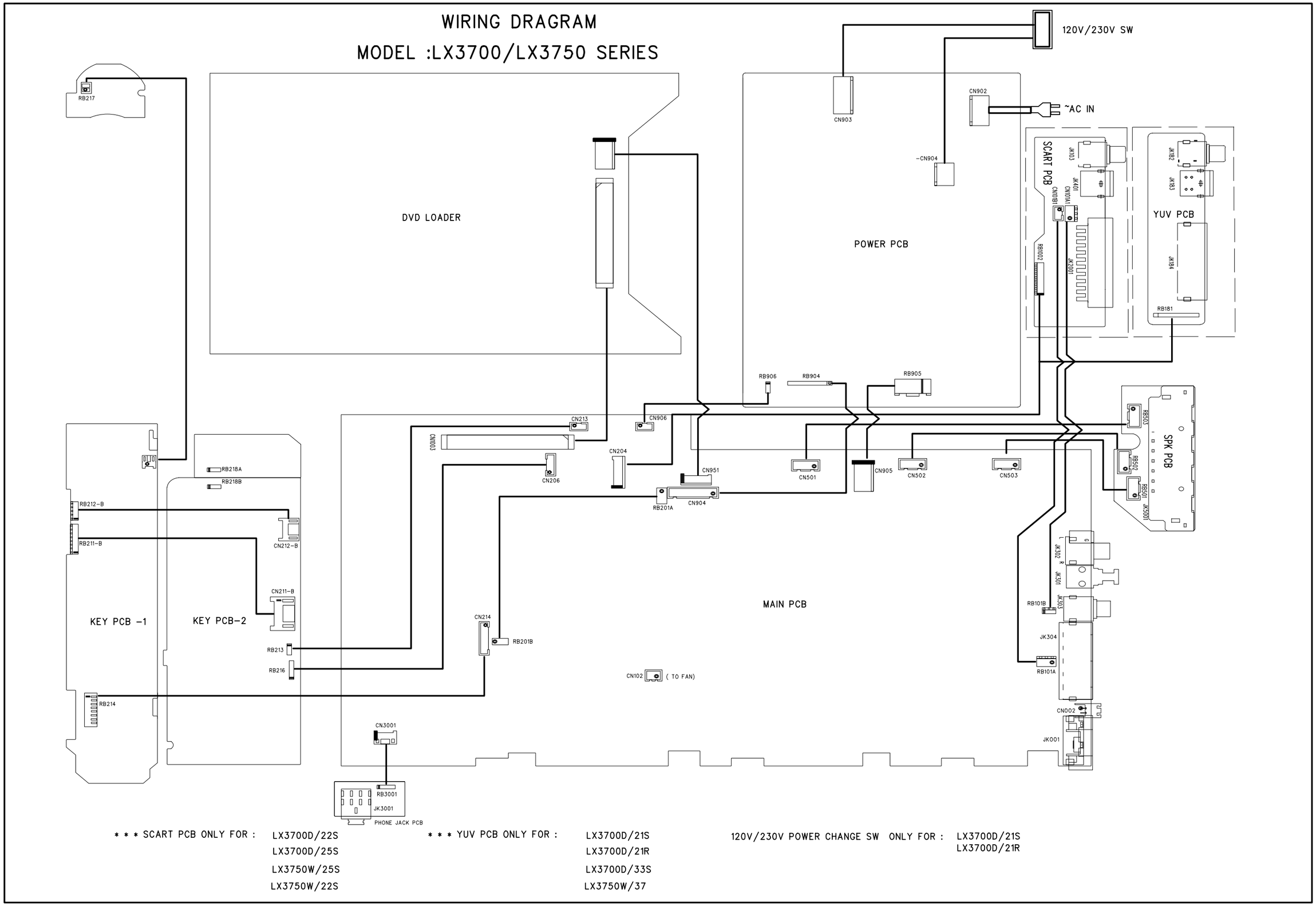
4-1

BLOCK DIAGRAM



4-2

WIRING DIAGRAM



* * * SCART PCB ONLY FOR : LX3700D/22S, LX3700D/25S, LX3750W/25S, LX3750W/22S

* * * YUV PCB ONLY FOR : LX3700D/21S, LX3700D/21R, LX3700D/33S, LX3750W/37

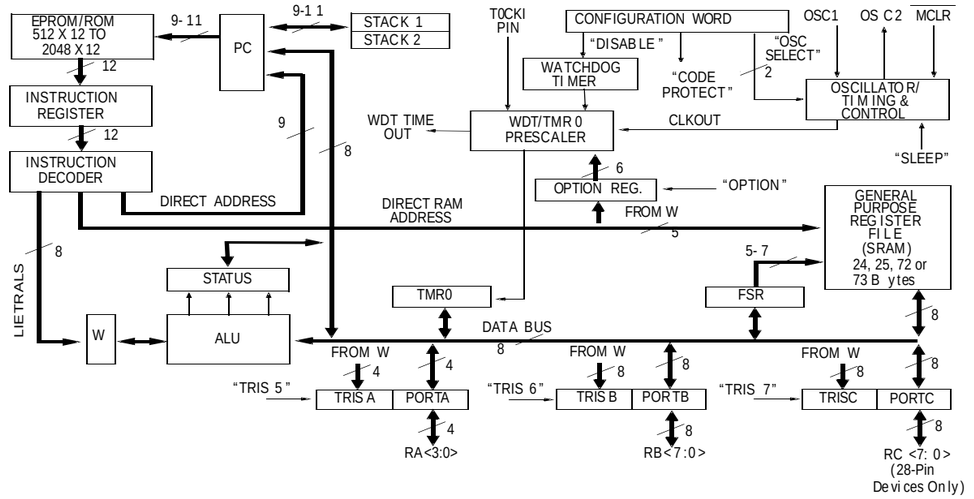
120V/230V POWER CHANGE SW ONLY FOR : LX3700D/21S, LX3700D/21R

CONTROL / SPEAKER JACK BOARD

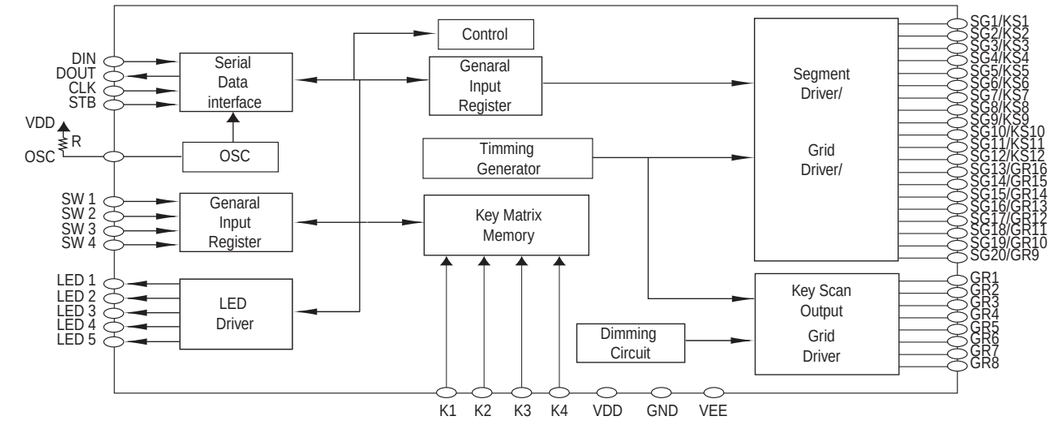
TABLE OF CONTENTS

IC Interbnal Block Diagram & Voltage 5-1
Circuit Diagram 5-2
PCB Layout View 5-3
Electrical Parts List 5-4

CF745 INTERNAL BLOCK DIAGRAM



PT6311 INTERNAL BLOCK DIAGRAM



VOLTAGE

IC201 (BG2B83)

PIN NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
Voltage	0	0	0	4.8	0	4.8	4.8	0	0	0	0	0	0	4.8	0	0	0	0		

IC251 (PT6311)

PIN NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	0	0	0	0	5	5	0.6	5	5	0.9	0	0	0	5	-18.5	-19	-19	-9.4	-17	-15
PIN NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Voltage	-18.8	-13.3	-11.3	-17	-11.4	-17	-19	-14.6	-17.3	-11.4	-13	-9.5	5	-19.5	-17.8	-17.9	-17.9	-17.9	-17.8	-15.9
PIN NO	41	42	43	44	45	46	47	48	49	50	51	52								
Voltage	-16.5	-16.7	15.8	16	5	0	0	2.1	2.1	2.2	2.2	3								

Q201 (2SA733)

PIN NO	b	c	e	
Voltage	4.8	0	4.8	

Q202 (2SA733)

PIN NO	b	c	e	
Voltage	4.8	0	4.8	

Q203 (25A733)

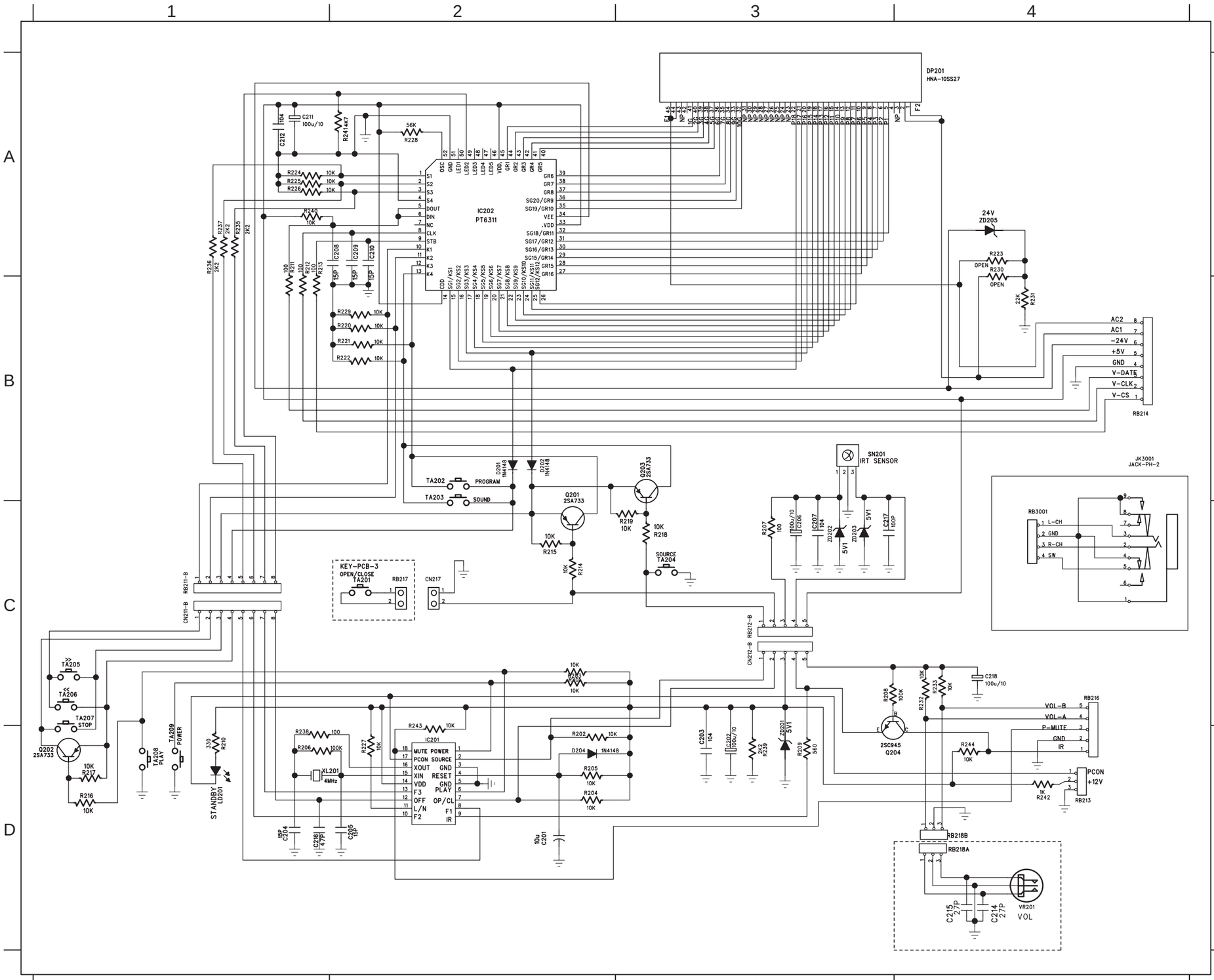
PIN NO	b	c	e	
Voltage	4.8	0	4.8	

Q204 (2SC945)

PIN NO	b	c	e	
Voltage	4.6	4.1	4.1	

5-2

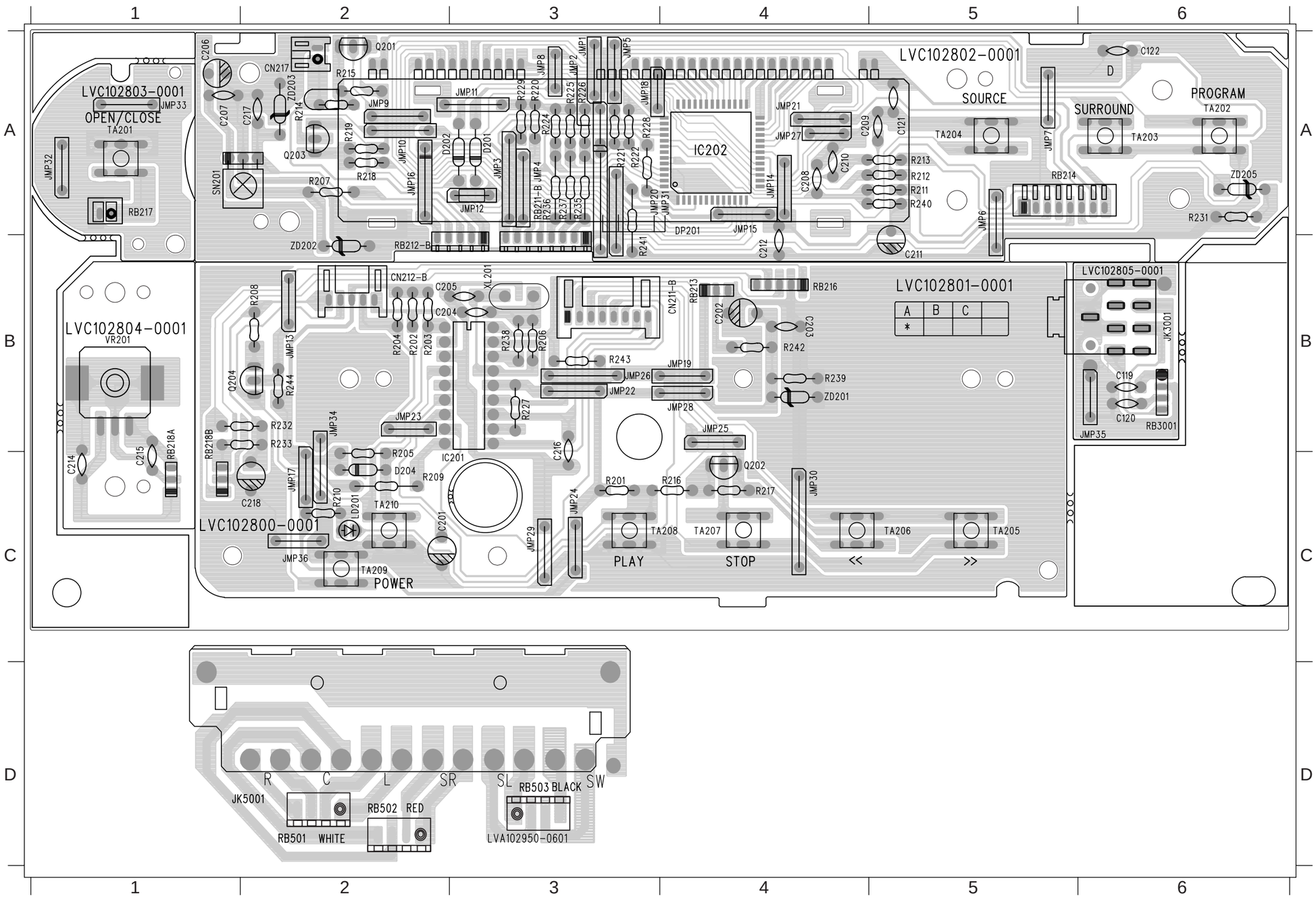
CIRCUIT DIAGRAM



C201	D2	R243	D2
C202	D3	R244	D4
C203	D3	R248	A2
C204	D1	RB211-B	C1
C205	D2	RB213	D4
C206	C3	RB214	B4
C207	C3	RB216	C4
C208	A2	RB217	C2
C209	A2	R218A	D4
C210	A2	R218B	D4
C211	A1	RB212-B	C3
C212	A1	RB3001	C4
C214	D4	SN201	B3
C215	D4	TA201	C2
C216	D1	TA202	B2
C217	C3	TA203	B2
C218	C4	TA204	C3
CN211-B	C1	TA205	C1
CN202-B	C3	TA206	C1
CN217	C2	TA207	C1
D201	B2	TA208	D1
D202	B2	TA209	D1
D204	D2	VR201	D4
DP201	A4	XL201	D1
IC201	D2	ZD201	D3
IC202	A2	ZD202	C3
JK3001	B4	ZD203	C3
LD201	D1	ZD205	A4
Q201	B2		
Q202	D1		
Q203	B3		
Q204	D3		
R201	C2		
R202	D2		
R203	C2		
R204	D2		
R205	D2		
R206	D1		
R207	C3		
R208	C3		
R209	D3		
R210	D1		
R211	A1		
R212	A1		
R213	A1		
R214	C2		
R215	C2		
R216	D1		
R217	D1		
R218	C3		
R219	C3		
R220	B2		
R221	B2		
R222	B2		
R224	A1		
R225	A1		
R226	A1		
R227	D2		
R229	B2		
R230	A4		
R231	B4		
R232	C4		
R233	C4		
R235	A1		
R236	A1		
R237	A1		
R238	D1		
R239	D3		
R240	A1		
R241	A2		
R242	D4		

5-3

PCB LAYOUT TOP VIEW



C119	B6	Q204	B1
C120	B6	R201	C3
C121	A5	R202	B2
C122	A5	R203	B2
C201	C2	R204	B2
C202	B4	R205	C2
C203	B4	R206	B3
C204	B2	R207	A2
C205	B2	R208	B2
C206	A1	R209	C2
C207	A1	R210	C2
C208	A4	R211	A5
C209	A4	R212	A5
C210	A4	R213	A5
C211	B5	R214	A2
C212	B4	R215	A2
C214	C1	R216	C4
C215	C1	R217	C4
C216	C3	R218	A2
C217	A2	R219	A2
C218	C2	R220	A3
CN211-B	B4	R221	A3
CN212-B	B2	R222	A3
CN217	A2	R224	A3
D201	A3	R225	A3
D202	A2	R226	A3
D204	C2	R227	B3
DP201	B4	R228	A3
IC201	C3	R229	A3
IC202	A4	R231	A6
JK3001	B6	R232	B2
JK5001	D2	R233	B2
JMP1	A3	R235	A3
JMP2	A3	R236	A3
JMP3	A3	R237	A3
JMP4	A3	R238	B3
JMP5	A3	R239	B4
JMP6	A5	R240	A5
JMP7	A5	R241	B3
JMP8	A3	R242	B4
JMP9	A2	R243	B3
JMP10	A2	R244	B2
JMP11	A3	RB211-B	A3
JMP12	A3	RB212-B	B2
JMP13	B2	RB213	B4
JMP14	A4	RB214	A5
JMP15	B4	RB216	B4
JMP17	C2	RB217	A1
JMP16	A2	RB218A	C1
JMP18	A3	RB218B	C1
JMP19	B4	RB501	D2
JMP20	A3	RB502	D2
JMP21	A4	RB503	D3
JMP22	B3	RB3001	B6
JMP23	B2	SN201	A1
JMP24	C3	TA201	A1
JMP25	B4	TA202	A6
JMP26	B3	TA203	A6
JMP27	A4	TA204	A5
JMP28	B4	TA205	C5
JMP29	C3	TA206	C5
JMP30	C4	TA207	C4
JMP31	A4	TA208	C4
JMP32	A1	TA209	C2
JMP33	A1	TA210	C2
JMP34	B2	VR201	B1
JMP35	B6	XL201	B3
JMP36	C2	ZD201	B4
LD201	C2	ZD202	B2
Q201	A2	ZD203	A2
Q202	C4	ZD205	A6
Q203	A2		

ELECTRICAL PARTSLIST - CONTROL BOARD

- MISCELLANEOUS -

CN211B	9965 000 18027	CONNECTOR 8P
CN212B	9965 000 18028	CONNECTOR 5P
CN213	9965 000 18029	CONNECTOR 3P
CN217	9965 000 18030	CONNECTOR 2P
DP201	9965 000 18031	VFD 100X25MM
JK3001	9965 000 18032	D3.5 9P NICKEL
LD201	9965 000 17400	LED
RB211B	9965 000 18033	8P 140MM 2468# 26 RAINBOW
RB212B	9965 000 18033	8P 140MM 2468# 26 RAINBOW
RB213	9965 000 18034	CON/WIRE 3P 180MM
RB214	9965 000 18035	8P 160MM 2468# 26
RB216	9965 000 18036	5P 150MM
RB217	9965 000 18037	2P 280MM
RB3001	9965 000 18038	4P 100MM
SN201	9965 000 10897	IR SENSOR RPM6938-V4
TA201	4822 276 13648	SWITCH
TA202	4822 276 13648	SWITCH
TA203	4822 276 13648	SWITCH
TA204	4822 276 13648	SWITCH
TA205	4822 276 13648	SWITCH
TA206	4822 276 13648	SWITCH
TA207	4822 276 13648	SWITCH
TA208	4822 276 13648	SWITCH
TA209	4822 276 13648	SWITCH
VR201 ⚠	9965 000 18039	ENCODER L15XA7

Note: Only these parts mentioned in the list are normal service parts.

- COILS & FILTERS -

XL201	9965 000 17405	CRYSTAL 4.00000MHZ

- DIODES -

D201	4822 130 30621	1N4148
D202	4822 130 30621	1N4148
D204	4822 130 30621	1N4148
ZD201	4822 130 34233	BZX79-B5V1
ZD202	4822 130 34233	BZX79-B5V1
ZD203	4822 130 34233	BZX79-B5V1
ZD205	9965 000 17373	23.6-24.7V 0.5W

- IC & TRANSISTORS -

IC201	9965 000 17447	IC S-CPU EM78P156ELP
IC251	9965 000 12550	PT6311(PTC)
Q201	4822 130 63876	2SA733R
Q202	4822 130 63876	2SA733R
Q203	4822 130 63876	2SA733R
Q204	4822 130 41198	2SC945P

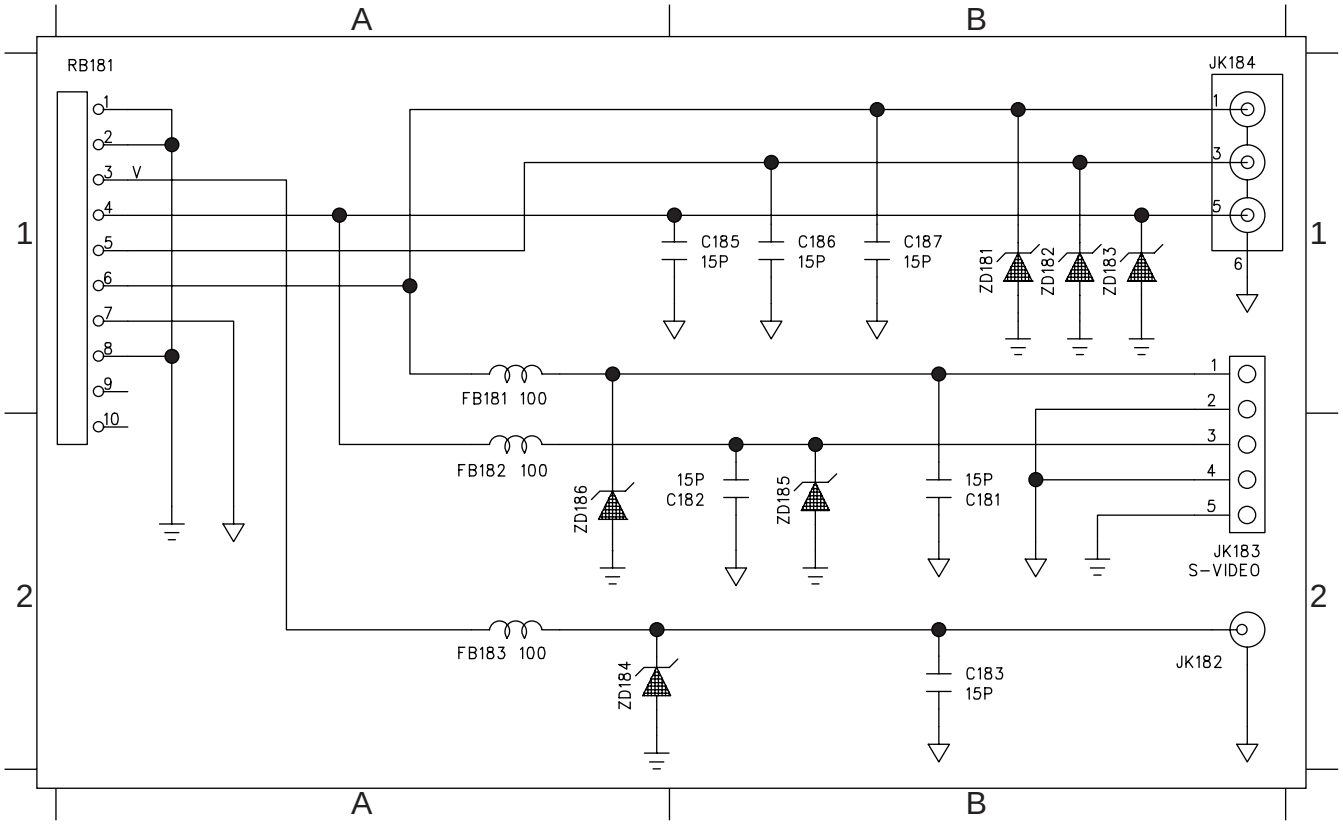
RGB & SCART BOARD

TABLE OF CONTENTS

RGB Circuit Diagram (For /21S/21R/37 only)..... 6-2
RGB Board Layout (For /21S/21R/37 only) 6-2
Scart Circuit Diagram (For /22S/25S only)..... 6-3
Scart Board Layout (For /22S/25S only) 6-3
Electrical Parts List(RGB & SCART) 6-4

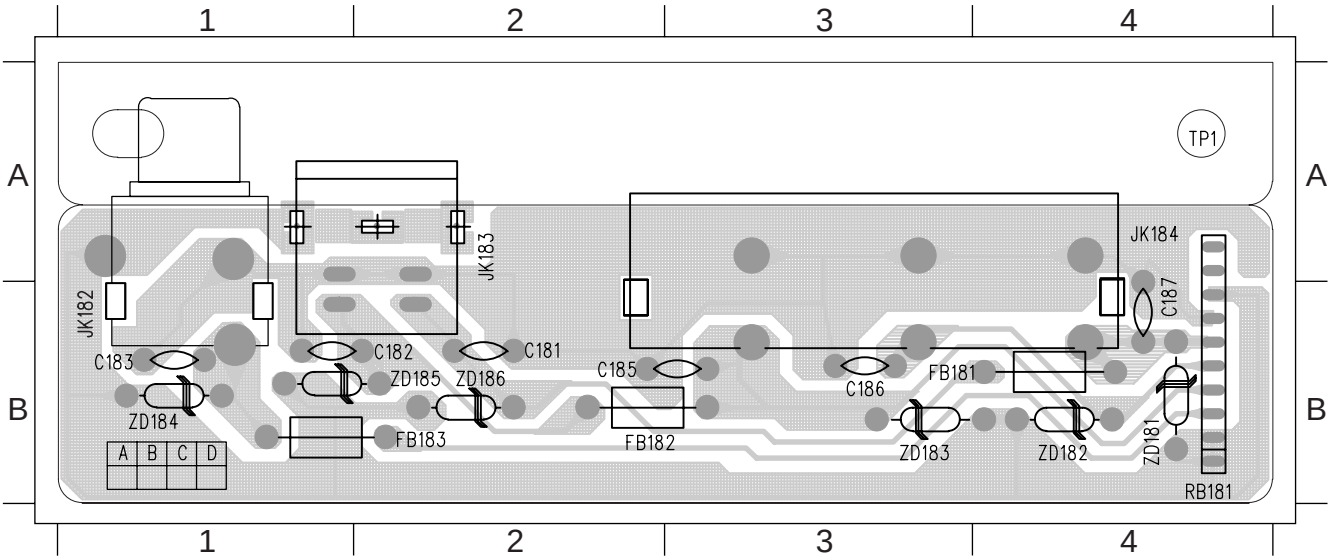
CIRCUIT DIAGRAM - RGB BOARD

C181	B2	C185	B1	FB181	A1	JK182	B2	RB181	A1	ZD183	B1	ZD186	A2
C182	B2	C186	B1	FB182	A2	JK183	B2	ZD181	B1	ZD184	A2		
C183	B2	C187	B1	FB183	A2	JK184	B1	ZD182	B1	ZD185	B2		

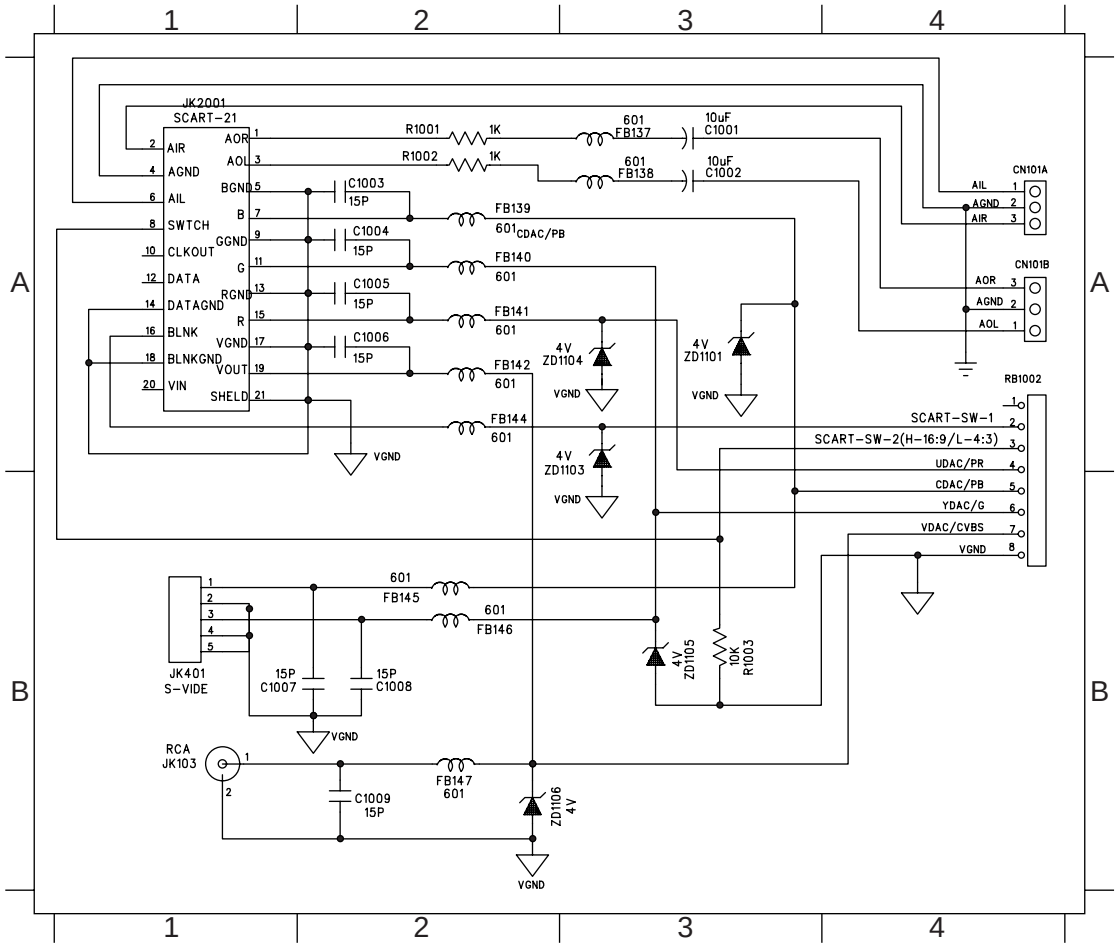


PCB LAYOUT - RGB BOARD

C181	B2	C185	B2	FB181	B3	JK182	B1	RB181	B4	ZD183	B3	ZD186	B2
C182	B2	C186	B3	FB182	B2	JK183	A2	ZD181	B4	ZD184	B1		
C183	B1	C187	B4	FB183	B2	JK184	A4	ZD182	B4	ZD185	B2		



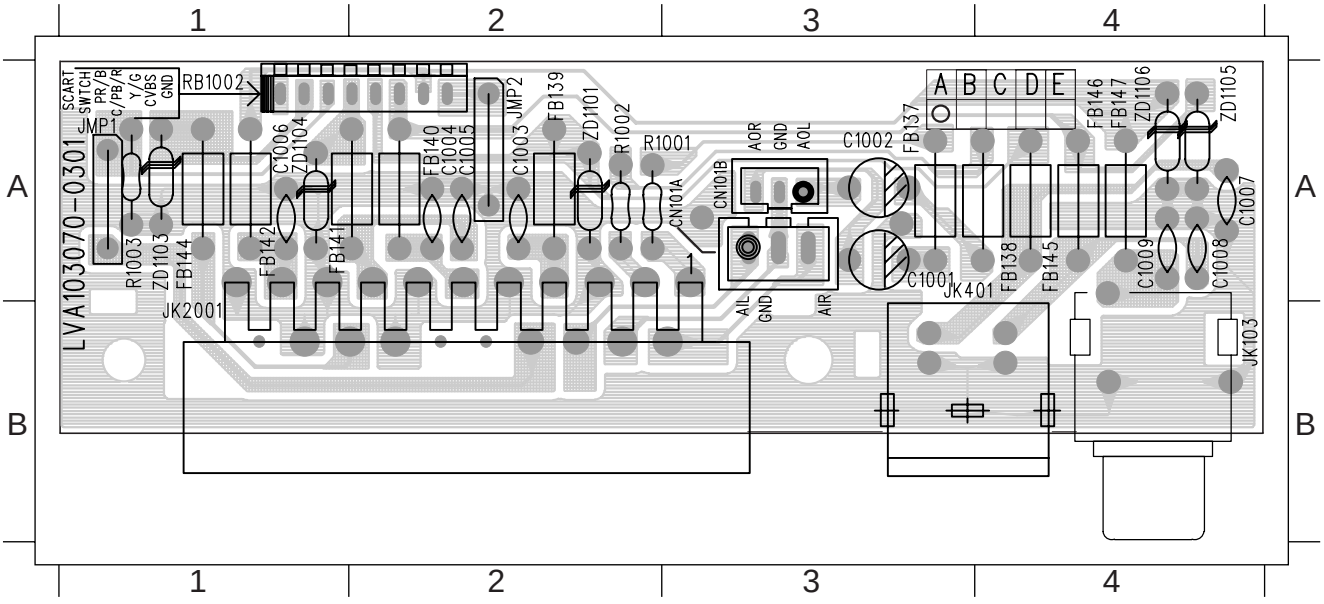
CIRCUIT DIAGRAM - SCART BOARD



C1001	A3
C1002	A3
C1003	A2
C1004	A2
C1005	A2
C1006	A2
C1007	B1
C1008	B2
C1009	B2
CN101A	A4
CN101B	A4
FB137	A3
FB138	A3
FB139	A2
FB140	A2
FB141	A2
FB142	A2
FB144	A2
FB145	B2
FB146	B2
FB147	B2
JK103	B1
JK401	B1
JK2001	A1
R1001	A2
R1002	A2
R1003	B3
RB1002	A4
ZD1101	A3
ZD1103	A3
ZD1104	A3
ZD1105	B3
ZD1106	B2

PCB LAYOUT - SCART BOARD

C1001	A3	C1007	A4	FB138	A4	FB145	A4	JMP1	A1	ZD1101	A2
C1002	A3	C1008	A4	FB139	A2	FB146	A4	JMP2	A2	ZD1103	A1
C1003	A2	C1009	A4	FB140	A2	FB147	A4	R1001	A2	ZD1104	A1
C1004	A2	CN101A	A3	FB141	A1	JK103	B4	R1002	A2	ZD1105	A4
C1005	A2	CN101B	A3	FB142	A1	JK401	A4	R1003	A1	ZD1106	A4
C1006	A1	FB137	A3	FB144	A1	JK2001	B1	RB1002	A1		



ELECTRICAL PARTSLIST - RGB BOARD

- MISCELLANEOUS -

JK182	9965 000 18044	JACK 1P W/GND
JK183	9965 000 12607	DIN JACK, S-VIDEO OUT
JK184	9965 000 12609	RCA JACK R/G/B
RB181	9965 000 18045	CON/WIRE UL2854# 30 5P

- COILS & FILTERS -

FB181	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ
FB182	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ
FB183	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ

- DIODES -

ZD181	4822 130 31554	BZX79-B4V3
ZD182	4822 130 31554	BZX79-B4V3
ZD183	4822 130 31554	BZX79-B4V3
ZD184	4822 130 31554	BZX79-B4V3
ZD185	4822 130 31554	BZX79-B4V3

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - SCART BOARD

- MISCELLANEOUS -

CN101A	9965 000 18015	CONNECTOR 3P
CN101B	9965 000 15900	CONNECTOR 3P
FB137	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB138	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB139	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB140	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB141	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB142	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB144	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB145	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB146	9965 000 12470	BEAD FERITE 100R/ at 100MHz
FB147	9965 000 12470	BEAD FERITE 100R/ at 100MHz
JK103	9965 000 18044	JACK 1P W/GND
JK401	9965 000 12607	DIN JACK, S-VIDEO OUT
JK2001	9965 000 18051	21P P=3.81MM
RB1002	9965 000 18052	CABLE 8P 300MM A=2.0mm

- DIODES -

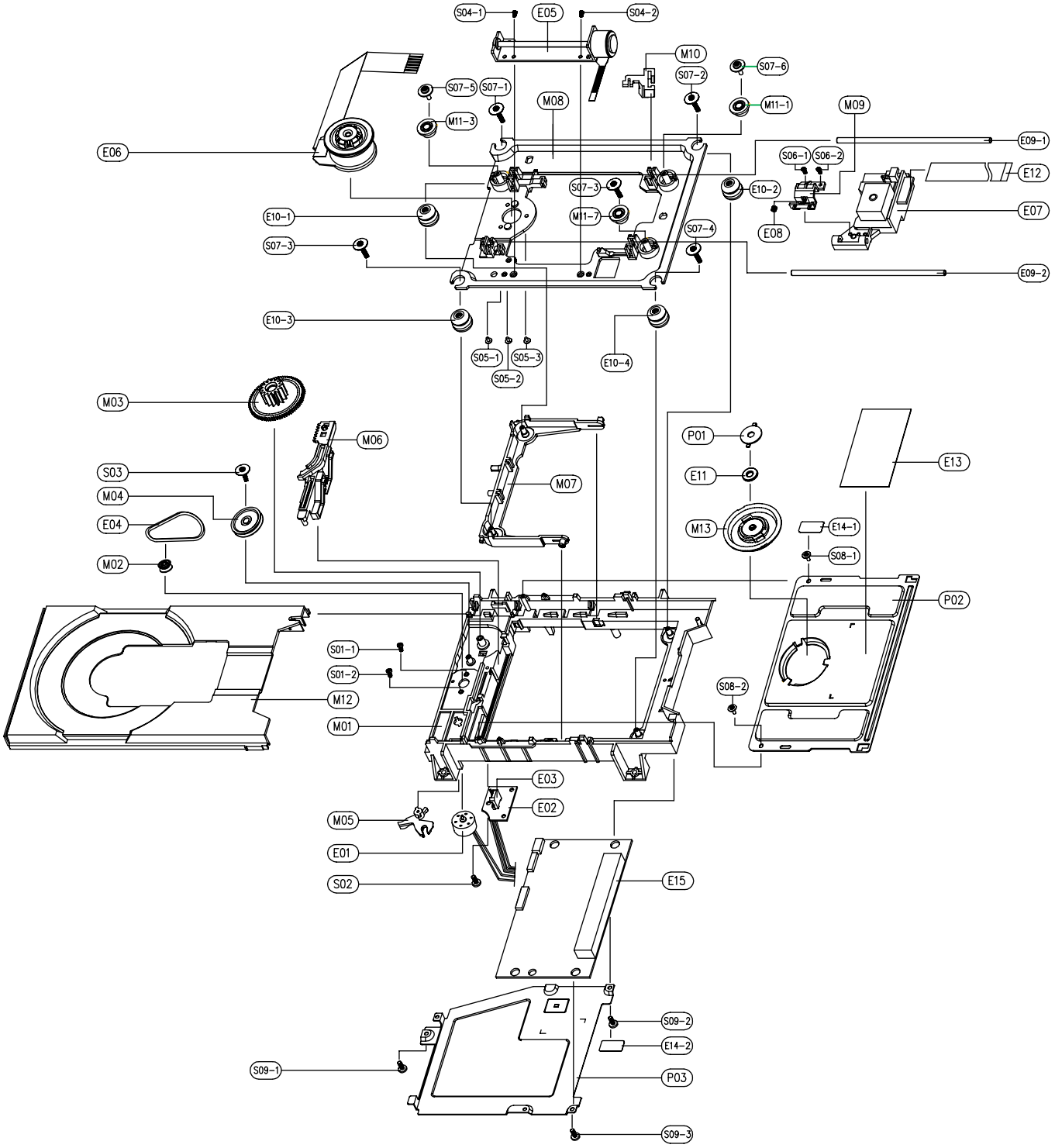
ZD1101	9965 000 12554	ZENER 3.8-4.0V 0.5W
ZD1103	9965 000 12554	ZENER 3.8-4.0V 0.5W
ZD1104	9965 000 12554	ZENER 3.8-4.0V 0.5W
ZD1105	9965 000 12554	ZENER 3.8-4.0V 0.5W
ZD1106	9965 000 12554	ZENER 3.8-4.0V 0.5W

Note: Only these parts mentioned in the list are normal service parts.

DVD LOADER

It is not recommended for component repair on this Module but to replace the major assembly when it becomes defective.
Therefore limited service parts list are published in this chapter.

Explorer View - DVD Loader



MECHANICAL PARTS LIST

M01	M1010000013	MAIN BASE
M02	62300000100	PULLEY LOADING
M03	62300000200	GEAR LOADING
M04	62300000300	GEAR PULLEY
M05	62230000102	LEVER SWITCH
M06	62230000202	CAM SLIDE
M07	62230000304	LEVER LIFT PU
M08	61050000900	BASE P/U OUT
M09	62300001800	SLIDE STEP
M10	62230001800	SUPORT PU
M11	62350000301	CAP G/S SKY
M12	62230000901	TRAY
M13	62230001700	CLAMP
P01	61050000200	PLATE CLAMP
P02	61010001501	COVER TOP
P03	61010001201	COVER BOTTOM
S01	50010000010	SCREW MC
S02	50020000005	SCREW TAP
S03	50020000010	SCREW TAP
S04	50040000007	SCREW TT
S05	50010000001	SCREW MC
S06	50040000009	SCREW TT
S07	50020000003	SCREW TAP
S08	50020000009	SCREW TAP
S09	50020000011	SCREW TAP
E01	30114000021	MOTOR GEAR
E02	30601000102	PCB BARE
E03	37012000003	SWITCH SENSTI
E04	62590000200	BELT PULLEY
E05	30114000012	MOTOR STEP
E06	30114000014	MOTOR SPINDLE
E07	35504000011	PICK UP
E08	61550000600	SPRING SLIDE
E09	61250000200	SHAFT P/U GUIDE
E10	62610000300	DAMPER
E11	35405000001	MAGNET CLAMP
E12	37590000005	FFC PU
E13	63140002100	LABEL MAIN
E14	63140000301	LABEL VOID
E15	E3000601502	PCB MAIN

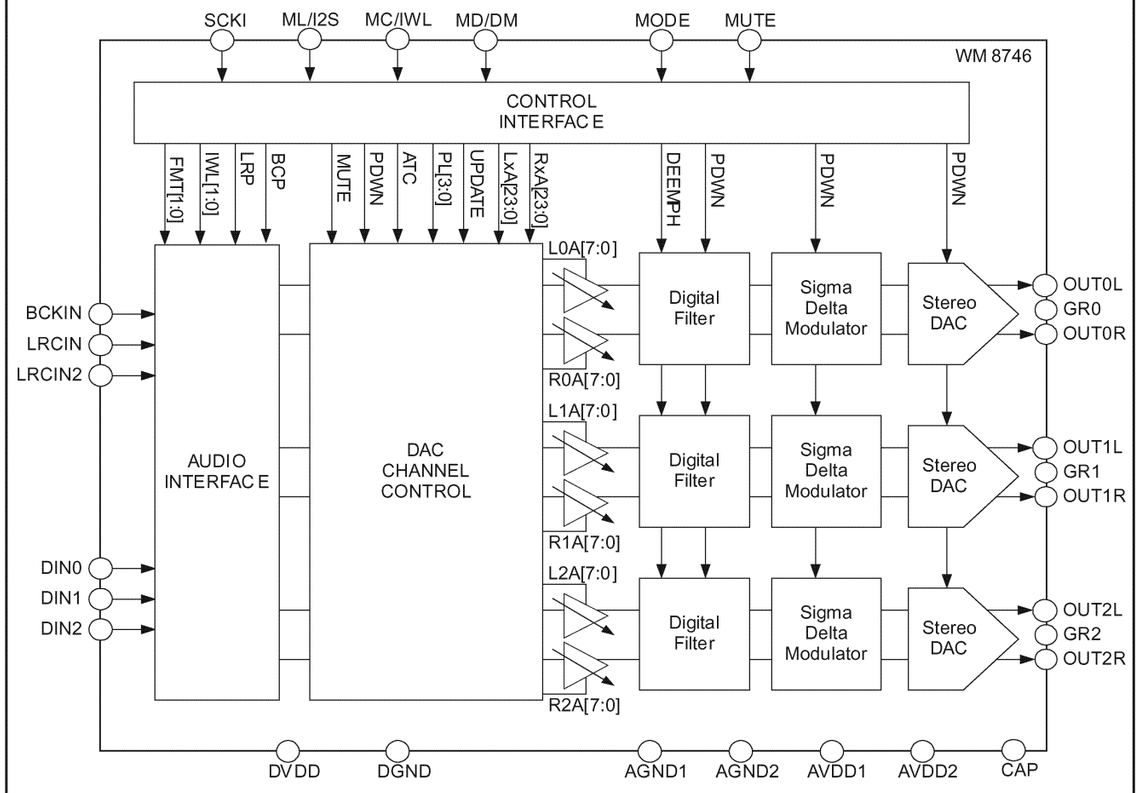
MAIN BOARD

TABLE OF CONTENTS

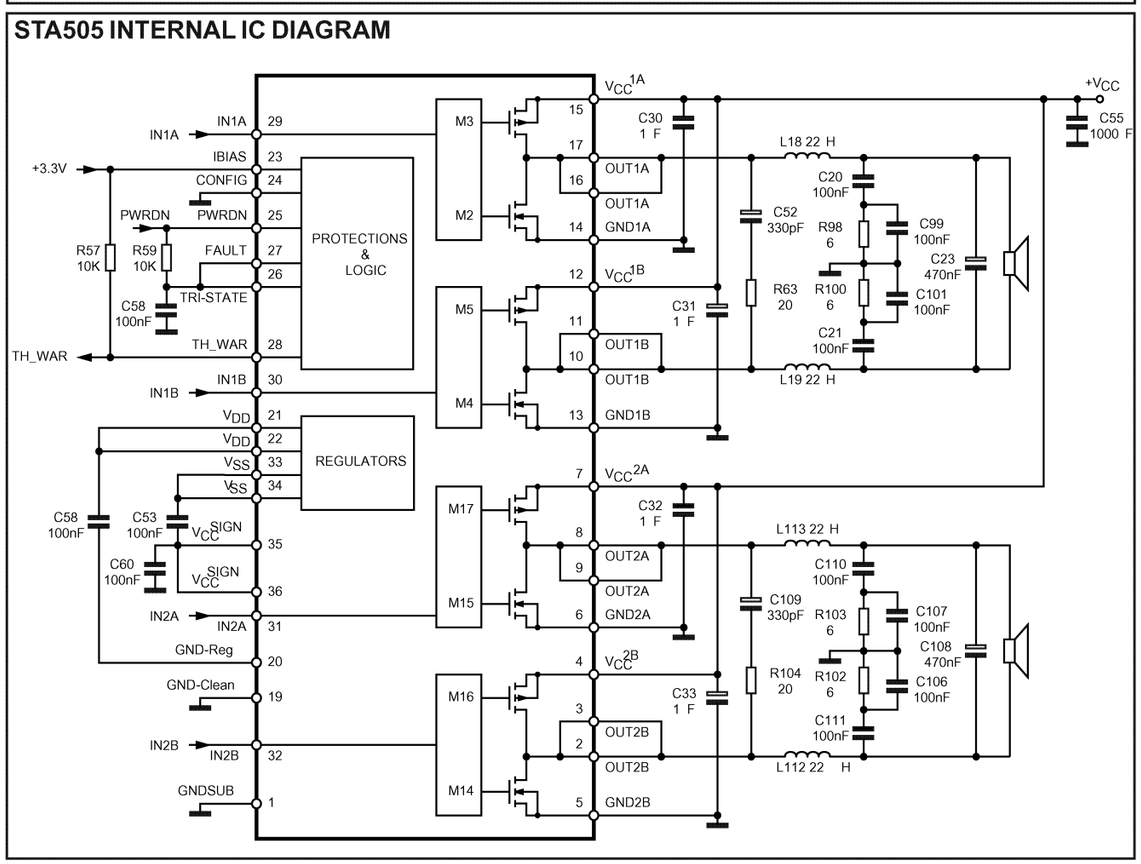
Internal IC Diagram ..... 8-1 to 8-9
Circuit Diagram (Top Left)..... 8-10
Circuit Diagram (Top Left)..... 8-11
Circuit Diagram (Bottom Left) 8-12
Circuit Diagram (Bottom Right) 8-13
PCB Layout(Component View) 8-14
Layout Mapping(Component View) 8-15
Layout Mapping(Copperside View) 8-16
PCB Layout(Copperside View)..... 8-17
Electrical Parts list 8-18

8-1

WM8746 INTERNAL IC DIAGRAM

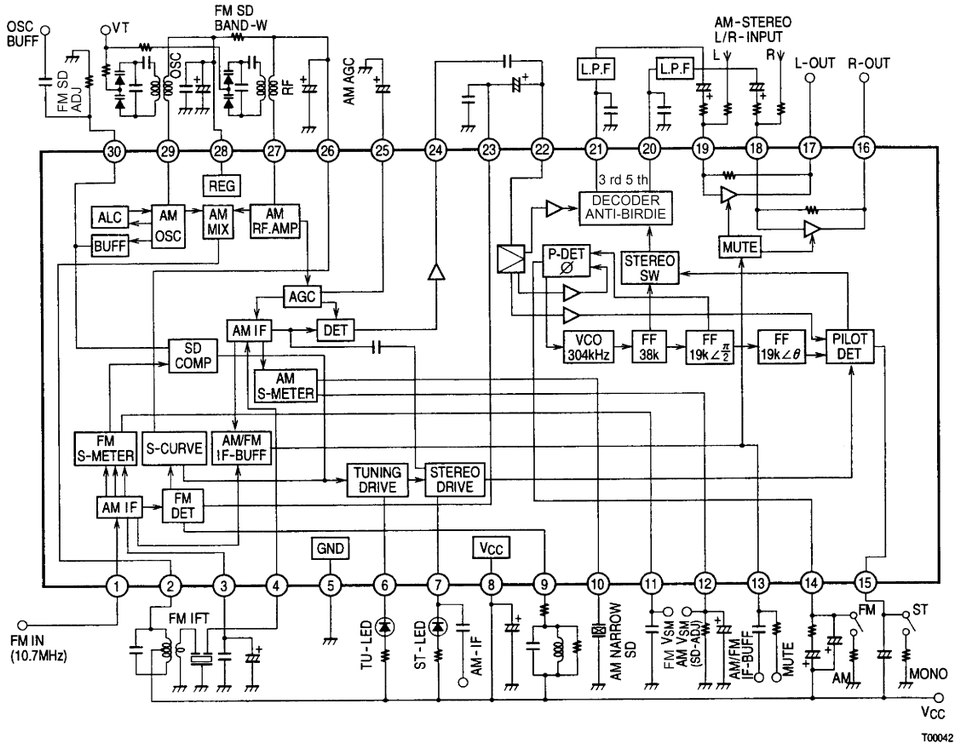


STA505 INTERNAL IC DIAGRAM

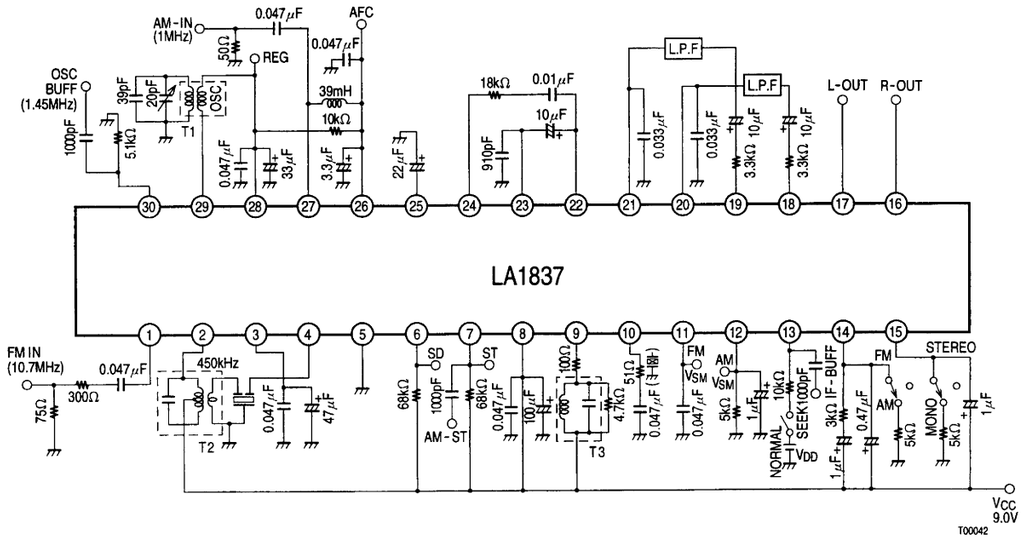


AM/FM IF & MPX IC
LA18 37

Block Diagram



Test Circuit Diagram



SYNCHRONOUS DRAM
4MX16 Y3VTW

PIN ASSIGNMENT (Top View)

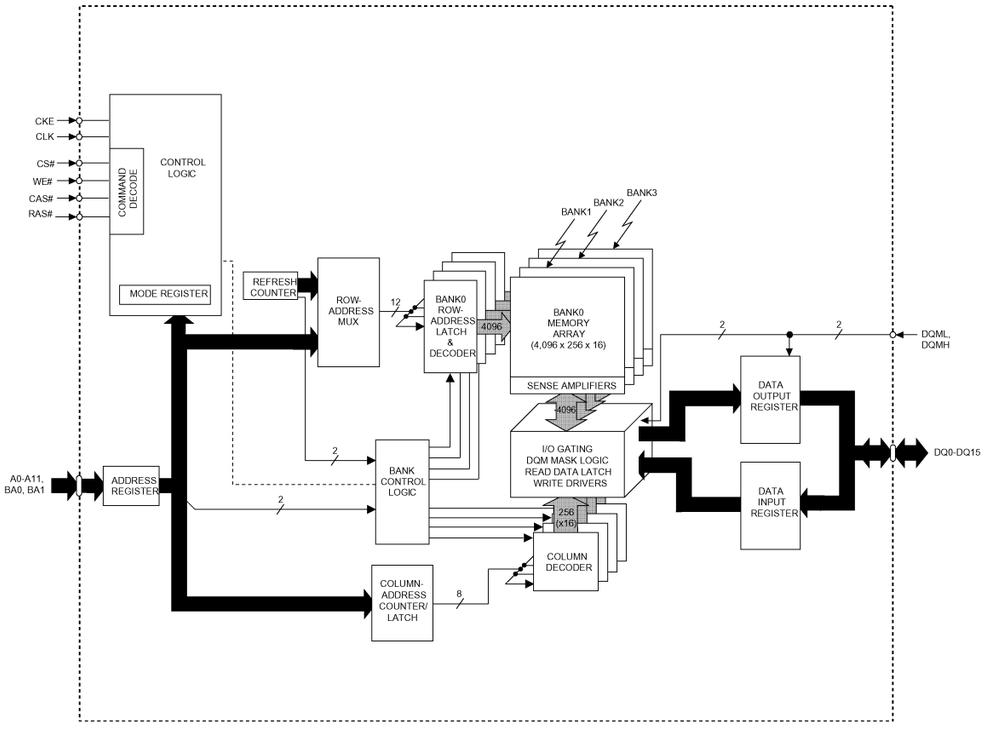
54- Pin TSOP

x4	x8	x16			x16	x8	x4
-	-	VDD	1	54	Vss	-	-
NC	DQ0	DQ0	2	53	DQ15	DQ7	NC
-	-	VDDQ	3	52	VssQ	-	-
NC	NC	DQ1	4	51	DQ14	NC	NC
DQ0	DQ1	DQ2	5	50	DQ13	DQ6	DQ3
-	-	VssQ	6	49	VDDQ	-	-
NC	NC	DQ3	7	48	DQ12	NC	NC
NC	DQ2	DQ4	8	47	DQ11	DQ5	NC
-	-	VDDQ	9	46	VssQ	-	-
NC	NC	DQ5	10	45	DQ10	NC	NC
DQ1	DQ3	DQ6	11	44	DQ9	DQ4	DQ2
-	-	VssQ	12	43	VDDQ	-	-
NC	NC	DQ7	13	42	DQ8	NC	NC
-	-	VDD	14	41	Vss	-	-
NC	NC	DQML	15	40	NC	-	-
-	-	WE#	16	39	DQMH	DQM	DQM
-	-	CAS#	17	38	CLK	-	-
-	-	RAS#	18	37	CKE	-	-
-	-	CS#	19	36	NC	-	-
-	-	BA0	20	35	A11	-	-
-	-	BA1	21	34	A9	-	-
-	-	A10	22	33	A8	-	-
-	-	A0	23	32	A7	-	-
-	-	A1	24	31	A6	-	-
-	-	A2	25	30	A5	-	-
-	-	A3	26	29	A4	-	-
-	-	VDD	27	28	Vss	-	-

Note: The # symbol indicates signal is active LOW. A dash (-) indicates x8 and x4 pin function is same as x16 pin function.

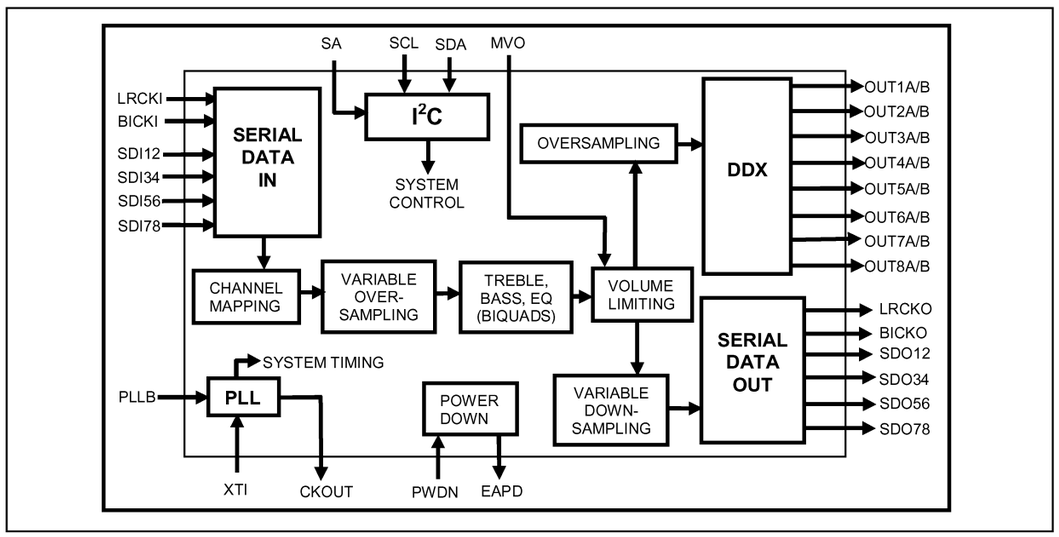
	16 Meg x 48	Meg x 84	Meg x 16
Configuration	4 Meg x 4 x 4 banks	2 Meg x 8 x 4 banks	1 Meg x 16 x 4 banks
RefreshCount	4K	4K	4K
RowAddressing	4K(A0-A11)	4K(A0-A11)	4K(A0-A11)
BankAddressing	4 (BA0,BA1)	4 (BA0,BA1)	4 (BA0,BA1)
ColumnAddressing	1K(A0-A9)	512(A0-A8)	256(A0-A7)

FUNCTIONAL BLOCK DIAGRAM
4 Meg x 16 SDRAM

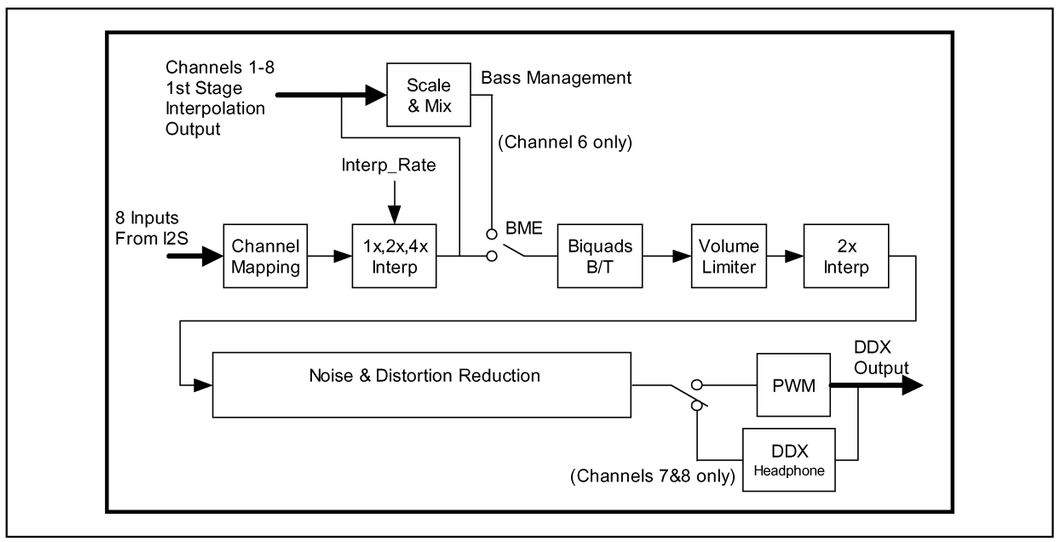


DIGITAL AUDIO PROCESSOR
STA308

BLOCK DIAGRAM



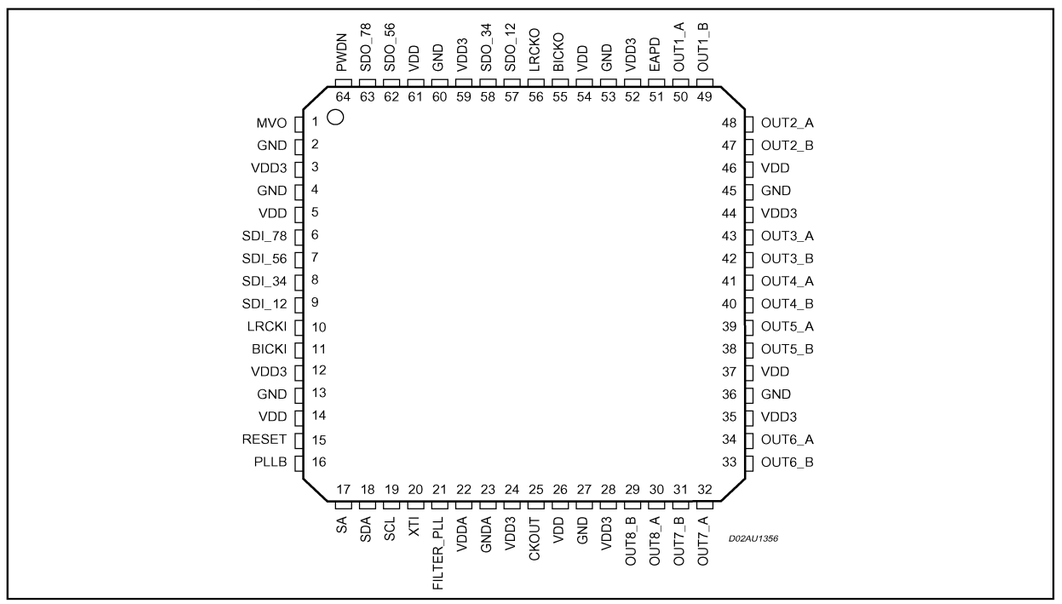
SIGNAL FLOW DIAGRAM



8-3

DIGITAL AUDIO PROCESSOR
STA308

IN CONNECTION (Top view)



PIN FUNCTION

PIN	NAME	TYPE	DESCRIPTION	PAD TYPE
1	MVO	I	Master Volume Override	CMOS Input Buffer with Pull-Down
3, 12, 24, 28, 35, 44, 52, 59	VDD3		3.3V Digital Supply	3.3V Digital Power Supply Voltage (pad ring)
2, 4, 13, 27, 36, 45, 53, 60	GND		Digital Ground	Digital Ground
5, 14, 26, 37, 46, 54, 61	VDD		2.5V Digital Supply	2.5V Digital Power Supply Voltage (core + ring)
6	SDI_78	I	Input I2S Serial Data Channels 7 & 8	5V Tolerant TTL Input Buffer
7	SDI_56	I	Input I2S Serial Data Channels 5 & 6	5V Tolerant TTL Input Buffer
8	SDI_34	I	Input I2S Serial Data Channels 3 & 4	5V Tolerant TTL Input Buffer
9	SDI_12	I	Input I2S Serial Data Channels 1 & 2	5V Tolerant TTL Input Buffer
10	LRCKI	I	Inputs I2C Left/Right Clock	5V Tolerant TTL Input Buffer
11	BICKI	I	Inputs I2C Serial Clock	5V Tolerant TTL Input Buffer
15	RESET	I	Global Reset	5V Tolerant TTL Schmitt Trigger Input Buffer
16	PLLB	I	PLL Bypass	CMOS Input Buffer with Pull-Down
17	SA	I	Select Address (I2C)	CMOS Input Buffer with Pull-Down
18	SDA	I/O	I2C Serial Data	Bidirectional Buffer: 5V Tolerant TTL Schmitt Trigger Input; 3.3V Capable 2 mA Slew-rate control Output;
19	SCL	I	I2C Serial Clock	5V Tolerant TTL Schmitt Trigger Input Buffer

DIGITAL AUDIO PROCESSOR STA308

PIN FUNCTION (continued)

PIN	NAME	TYPE	DESCRIPTION	PAD TYPE
20	XTI	I	Crystal Oscillator Input (Clock Input)	3.3V Tolerant TTL Schmitt Trigger Input Buffer
21	FILTER_PLL		PLL Filter	Analog Pad
22	VDDA		PLL 2.5V Supply	2.5V Analog Power Supply Voltage
23	GNDA		PLL Ground	Analog Ground
25	CKOUT	O	Clock Output	3.3V Capable TTL Tristate 4mA Output Buffer
29	OUT8_B	O	PWM Channel 8 Output B	3.3V Capable TTL 2mA Output Buffer
30	OUT8_A	O	PWM Channel 8 Output A	3.3V Capable TTL 2mA Output Buffer
31	OUT7_B	O	PWM Channel 7 Output B	3.3V Capable TTL 2mA Output Buffer
32	OUT7_A	O	PWM Channel 7 Output A	3.3V Capable TTL 2mA Output Buffer
33	OUT6_B	O	PWM Channel 6 Output B	3.3V Capable TTL 2mA Output Buffer
34	OUT6_A	O	PWM Channel 6 Output A	3.3V Capable TTL 2mA Output Buffer
38	OUT5_B	O	PWM Channel 5 Output B	3.3V Capable TTL 2mA Output Buffer
39	OUT5_A	O	PWM Channel 5 Output A	3.3V Capable TTL 2mA Output Buffer
40	OUT4_B	O	PWM Channel 4 Output B	3.3V Capable TTL 2mA Output Buffer
41	OUT4_A	O	PWM Channel 4 Output A	3.3V Capable TTL 2mA Output Buffer
42	OUT3_B	O	PWM Channel 3 Output B	3.3V Capable TTL 2mA Output Buffer
43	OUT3_A	O	PWM Channel 3 Output A	3.3V Capable TTL 2mA Output Buffer
47	OUT2_B	O	PWM Channel 2 Output B	3.3V Capable TTL 2mA Output Buffer
48	OUT2_A	O	PWM Channel 2 Output A	3.3V Capable TTL 2mA Output Buffer
49	OUT1_B	O	PWM Channel 1 Output B	3.3V Capable TTL 2mA Output Buffer
50	OUT1_A	O	PWM Channel 1 Output A	3.3V Capable TTL 2mA Output Buffer
51	EAPD	O	External Amplifier Power Down	3.3V Capable TTL 2mA Output Buffer
55	BICKO	O	Output I2S Serial Clock	3.3V Capable TTL 2mA Output Buffer
56	LRCKO	O	Output I2S Left/Right Clock	3.3V Capable TTL 2mA Output Buffer
57	SDO_12	O	Output I2S Serial Data Channels 1 & 2	3.3V Capable TTL 2mA Output Buffer
58	SDO_34	O	Output I2S Serial Data Channels 3 & 4	3.3V Capable TTL 2mA Output Buffer
62	SDO_56	O	Output I2S Serial Data Channels 5 & 6	3.3V Capable TTL 2mA Output Buffer
63	SDO_78	O	Output I2S Serial Data Channels 7 & 8	3.3V Capable TTL 2mA Output Buffer
64	PWDN	I	Device Powerdown	5V Tolerant TTL Schmitt Trigger Input Buffer

OCTAL D- TYPE FLIP- FLOP; POSITIVE EDGE- TRIGGER; 3- STATE 74HC/HCT374

PIN DESCRIPTION

PIN NO.	SYMBOL	NAME AND FUNCTION
1	$\overline{OE}$	3-state output enable input (active LOW)
2, 5, 6, 9, 12, 15, 16, 19	Q_0 to Q_7	3-state flip-flop outputs
3, 4, 7, 8, 13, 14, 17, 18	D_0 to D_7	data inputs
10	GND	ground (0 V)
11	CP	clock input (LOW-to-HIGH, edge-triggered)
20	V_{CC}	positive supply voltage

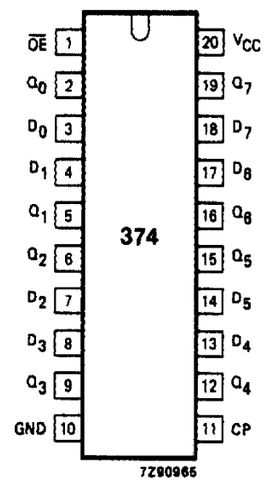


Fig.1 Pin configuration.

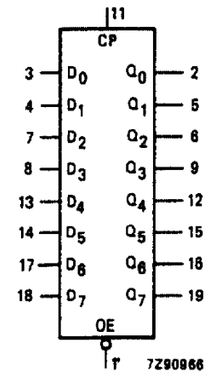


Fig.2 Logic symbol.

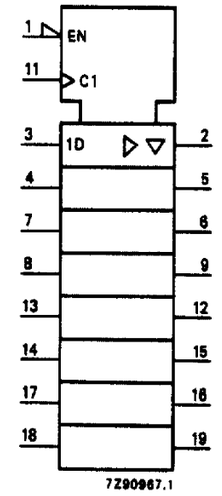
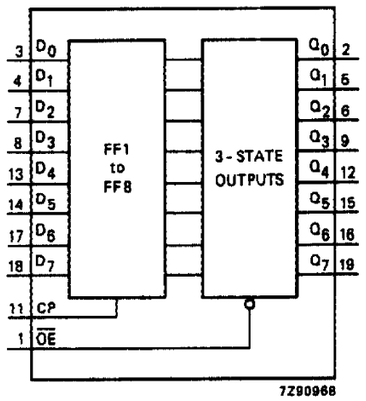


Fig.3 IEC logic symbol.

OCTAL D- TYPE FLIP- FLOP; POSITIVE EDGE- TRIGGER; 3- STATE
74HC/HCT374



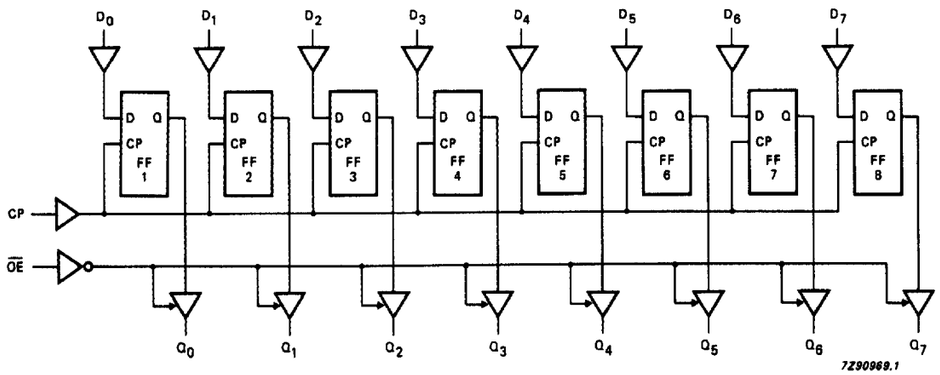
Functional diagram.

FUNCTION TABLE

OPERATING MODES	INPUTS			INTERNAL FLIP- FLOPS	OUTPUTS
	$\overline{OE}$	CP	D_n		Q_0 to Q_7
load and read register	L L	↑ ↑	l h	L H	L H
load register and disable outputs	H H	↑ ↑	l h	L H	Z Z

Notes

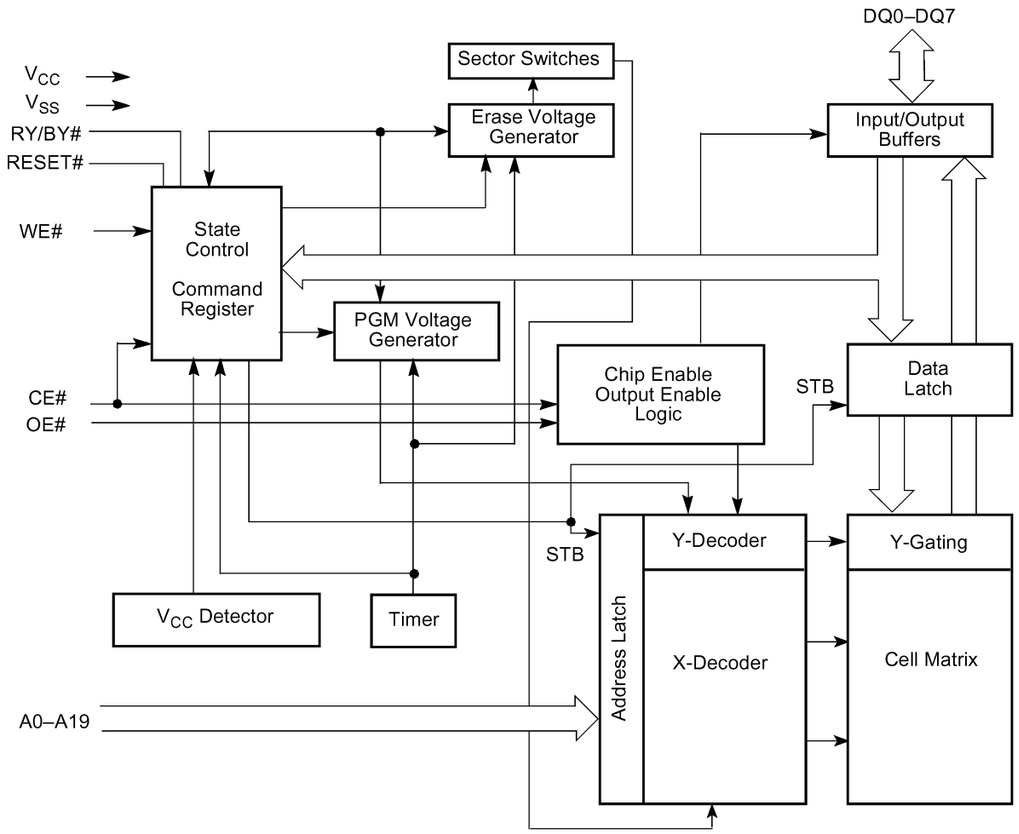
1. H = HIGH voltage level
   h = HIGH voltage level one set-up time prior to the LOW-to-HIGH CP transition
   L = LOW voltage level
   l = LOW voltage level one set-up time prior to the LOW-to-HIGH CP transition
   Z = high impedance OFF-state
   ↑ = LOW-to-HIGH CP transition



Logic diagram.

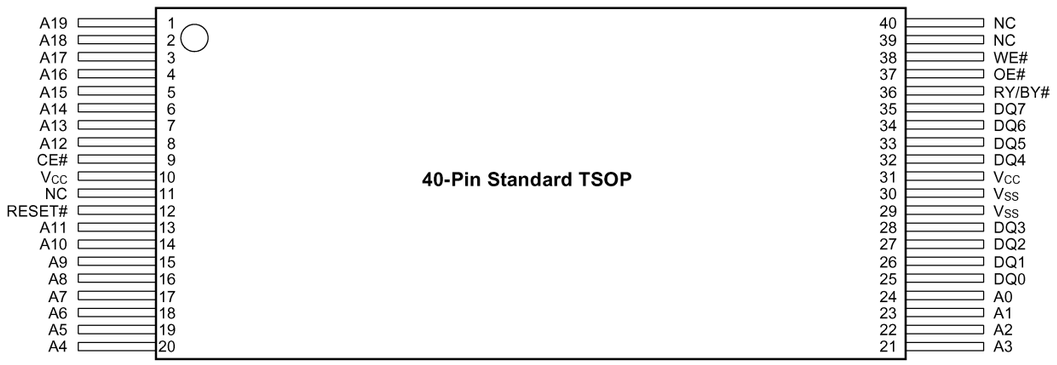
FLASH MEMORY
Am29F08 0B- 90EC

BLOCK DIAGRAM



FLASH MEMORY
Am29F08 0B- 90EC

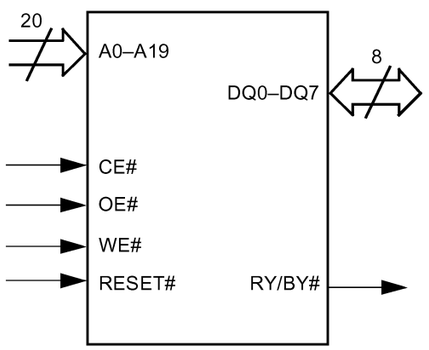
CONNECTION DIAGRAMS



PIN CONFIGURATION

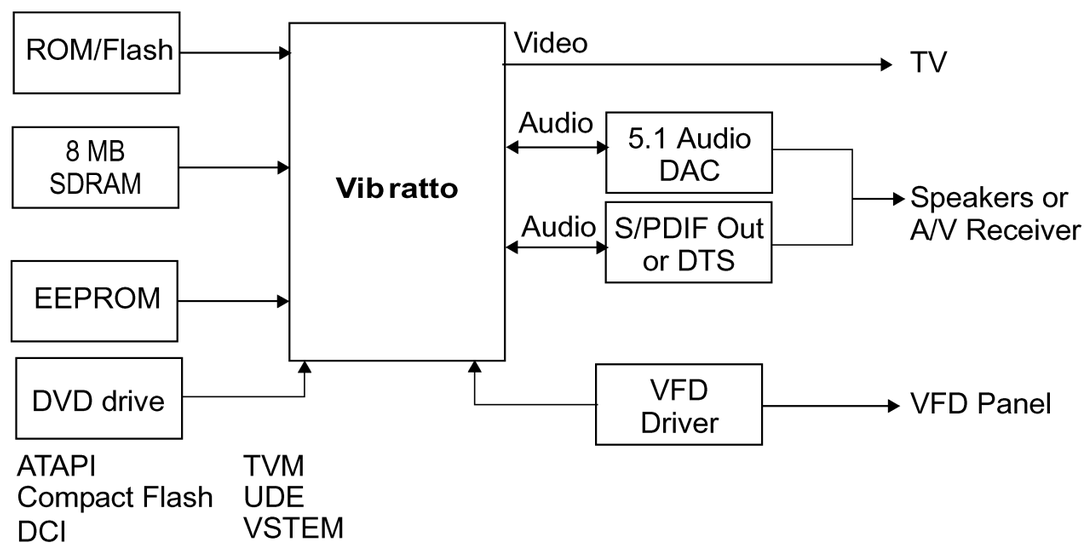
A0–A19 = 20 Addresses
DQ0–DQ7 = 8 Data Inputs/Outputs
CE# = Chip Enable
WE# = Write Enable
OE# = Output Enable
RESET# = Hardware Reset Pin, Active Low
RY/BY# = Ready/Busy Output
V_{CC} = +5.0 V single power supply (see Product Selector Guide for device speed ratings and voltage supply tolerances)
V_{SS} = Device Ground
NC = Pin Not Connected Internally

LOGIC SYMBOL



DVD PROCESSOR
ES6 028 F

SYSTEM BLOCK DIAGRAM

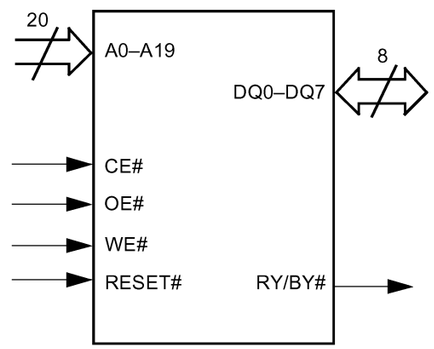


Vibratto System Block Diagram

PIN CONFIGURATION

A0–A19 = 20 Addresses
DQ0–DQ7 = 8 Data Inputs/Outputs
CE# = Chip Enable
WE# = Write Enable
OE# = Output Enable
RESET# = Hardware Reset Pin, Active Low
RY/BY# = Ready/Busy Output
V_{CC} = +5.0 V single power supply (see Product Selector Guide for device speed ratings and voltage supply tolerances)
V_{SS} = Device Ground
NC = Pin Not Connected Internally

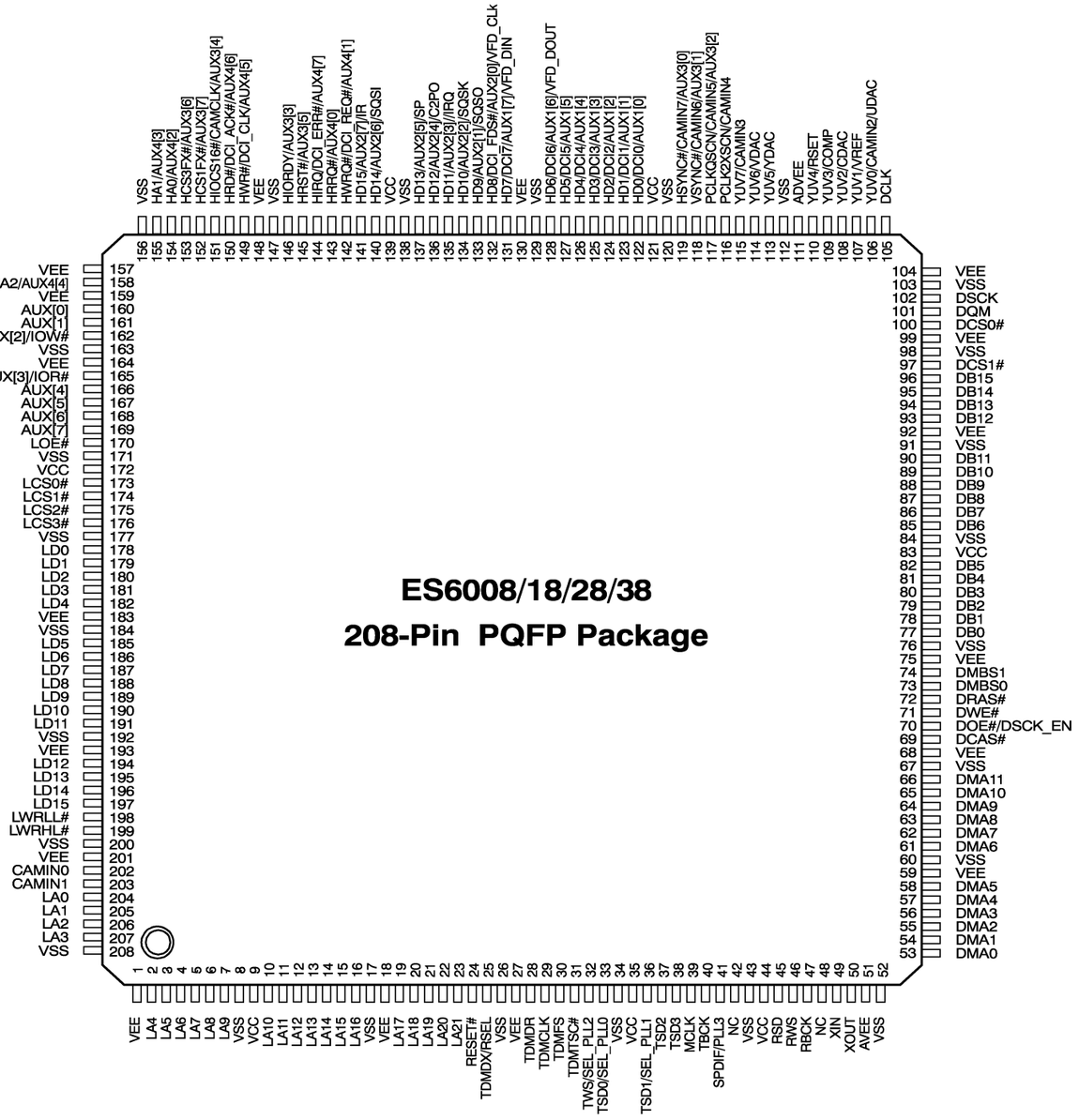
LOGIC SYMBOL



DVD PROCESSOR
ES6028F

ES60X8 PINOUT DIAGRAM

The identical device pinouts for the ES6008, ES6018, ES6028 and ES6038 are shown in Figure 2.



ES60x8 Pinout

8-7

DVD PROCESSOR
ES6028F

ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
MCLK	39	I/O	Audio master clock for audio DAC.
TBCK	40-	O	Audio-transmit bit clock.
SPDIF	41	O	S/PDIF output.
SEL_PLL3		I	Clock source select. SEL_PLL3: 0 = Crystal oscillator; 1 = DCLK input
NC	42, 48		No connect pins. Leave open.
RSD	45	I	Audio receive serial data.
RWS	46	I	Audio receive frame sync.
RBCK	47-	I	Audio receive bit clock.
XIN	49	I	Crystal input.
XOUT	50	O	Crystal output.
AVEE	51	I	Analog power for PLL.
DMA[11:0]	66:61, 58:53	O	DRAM address bus [11:0].
DCAS#	69-	O	DRAM column address strobe.
DOE#	70	O	DRAM output enable
DSCK_EN		O	DRAM clock enable.
DWE#	71	O	DRAM write enable.
DRAS#	72	O	DRAM row address strobe
DMBS0	73	O	SDRAM bank select 0.
DMBS1	74	O	SDRAM bank select 1.
DB[15:0]	96:93, 90:85, 82:77	I/O	DRAM data bus [15:0].
DCS[1:0]#	97,100	O	SDRAM chip select [1:0].
DQM	101	O	Data input/output mask.
DSCK	102	O	Output clock to SDRAM.
DCLK	105	I	27 MHz clock input to PLL.
YUV0	106	O	YUV0 pixel output data.
CAMIN2		I	Camera input 2.
UDAC		O	Video-DAC output. Mode A: YDAC=Y, UDAC=C, VDAC=Composite, CDAC=C Mode B: YDAC=Y, UDAC=Composite, VDAC=Composite, CDAC=C Mode C: YDAC=Y, UDAC=U, VDAC=Composite, CDAC=V Mode D: YDAC=Y, UDAC=U, VDAC=C, CDAC=V Y: Luma component for YUV and Y/C processing. C: Chrominance signal for Y/C processing. U: Chrominance component signal for YUV mode. V: Chrominance component signal for YUV mode.

DVD PROCESSOR
ES6028F

ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
YUV1	107	O	YUV1 pixel output data.
VREF		I	Internal voltage reference to video DAC. Bypass to ground with 0.1 µF capacitor.
YUV2	108	O	YUV2 pixel output data.
CDAC		O	Video DAC output. Refer to description and matrix for UDAC pin 106.
YUV3	109	O	YUV3 pixel output data.
COMP		I	Compensation input. Bypass to ADVEE with 0.1 µF capacitor.
YUV4	110	O	YUV4 pixel output data.
RSET		I	DAC current adjustment resistor input.
ADVEE	111	I	Analog power for video DAC.
YUV5	113	O	YUV5 pixel output data.
YDAC		O	Video-DAC output. Refer to description and matrix for UDAC pin 106.
YUV6	114	O	YUV6 pixel output data.
VDAC		O	Video-DAC output. Refer to description and matrix for UDAC pin 106.
YUV7	115	O	YUV7 pixel output data.
CAMIN3		I	Camera YUV 3.
PCLK2XSCN	116	I/O	27-MHz video output pixel clock.
CAMIN4		I	Camera YUV 4.
PCLKQSCN	117	O	13.5-MHz video output pixel clock.
CAMIN5		I	Camera YUV 5.
VSYNC#	118	I/O	Vertical sync, active low.
CAMIN6		I	Camera YUV 6.
HSYNC#	119	I/O	Horizontal sync, active low.
CAMIN7		I	Camera YUV 7.
HD[5:0]	127:122	I/O	Host data I/O [5:0].
DCI[5:0]		I/O	DVD channel data I/O [5:0].
AUX1[5:0]		I/O	Aux1 data I/O [5:0].
HD[6]	128	I/O	Host data I/O [6].
DCI[6]		I/O	DVD channel data I/O [6].
AUX1[6]		I/O	Aux1 data I/O [6].
VFD_DOUT		I	VFD data output.
HD[7]	131	I/O	Host data I/O [7].
DCI[7]		I/O	DVD channel data I/O [7].
AUX1[7]		I/O	Aux1 data I/O [7:0].
VFD_DIN		I	VFD data input.
HD[8]	132	I/O	Host data bus 8.
DCI_FDS#		I/O	DVD input sector start.
AUX2[0]		I/O	Aux2 data I/O 0.
VFD_CLK		I	VFD clock input.
HD[9]	133	I/O	Host data bus line 9.
AUX2[1]		I/O	Aux2 data I/O [1] when selected.
SQSQ		I	Subcode-Q data.
HD[10]	134	I/O	Host data bus line10.
AUX2[2]		I/O	Aux2 data I/O [2] when selected.
SQSK		I	Subcode-Q clock.

8-8

DVD PROCESSOR
ES6028F

ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
HD[11]	135	I/O	Host data bus line11.
AUX2[3]		I/O	Aux2 data I/O [3] when selected.
IRQ		O	IRQ output.
HD[12]	136	I/O	Host data bus line12.
AUX2[4]		I/O	Aux2 data I/O [4] when selected.
C2PO		I	C2PO error correction flag from CD-ROM.
HD[13]	137	I/O	Host data bus line13.
AUX2[5]		I/O	Aux2 data I/O [5] when selected.
SP		I	16550 UART serial port input.
HD[14]	140	I/O	Host data bus line14.
AUX2[6]		I/O	Aux2 data I/O [6] when selected.
SQSI		I	Subcode-Q sync.
HD[15]	141	I/O	Host data bus line15.
AUX2[7]		I/O	Aux2 data I/O [7] when selected.
IR		I	IR remote control input.
HWRQ#	142	O	Host write request.
DCI_REQ#		O	DVD control interface request.
AUX4[1]		I/O	Aux4 data I/O 1.
HRRQ#	143	O	Host read request.
AUX4[0]		I/O	Aux4 data I/O 0.
HIRQ	144	I/O	Host interrupt.
DCI_ERR#		I/O	DVD channel data error.
AUX4[7]		I/O	Aux4 data I/O 7.
HRST#	145	O	Host reset.
AUX3[5]		I/O	Aux3 data I/O 5.
HIORDY	146	I	Host I/O ready.
AUX3[3]		I/O	Aux3 data I/O 3.
HWR#	149	I/O	Host write.
DCI_CLK		I/O	DVD channel data clock.
AUX4[5]		I/O	Aux4 data I/O 5.
HRD#	150	O	Host read.
DCI_ACK#		O	DVD channel data valid.
AUX4[6]		I/O	Aux4 data I/O 6.
HIOCS16#	151	I	Device 16-bit data transfer.
CAMCLK		I	Camera port pixel clock input.
AUX3[4]		I/O	Aux3 data I/O 4.
HCS1FX#	152	O	Host select 1.
AUX3[7]		I/O	Aux3 data I/O 7.
HCS3FX#	153	O	Host select 3.
AUX3[6]		I/O	Aux3 data I/O 6.
HA[2:0]	158, 155:154	I/O	Host address bus.
AUX4[4:2]		I/O	Aux4 data I/Os [4:2].
AUX[1:0]	160	I/O	Auxiliary ports 1:0.

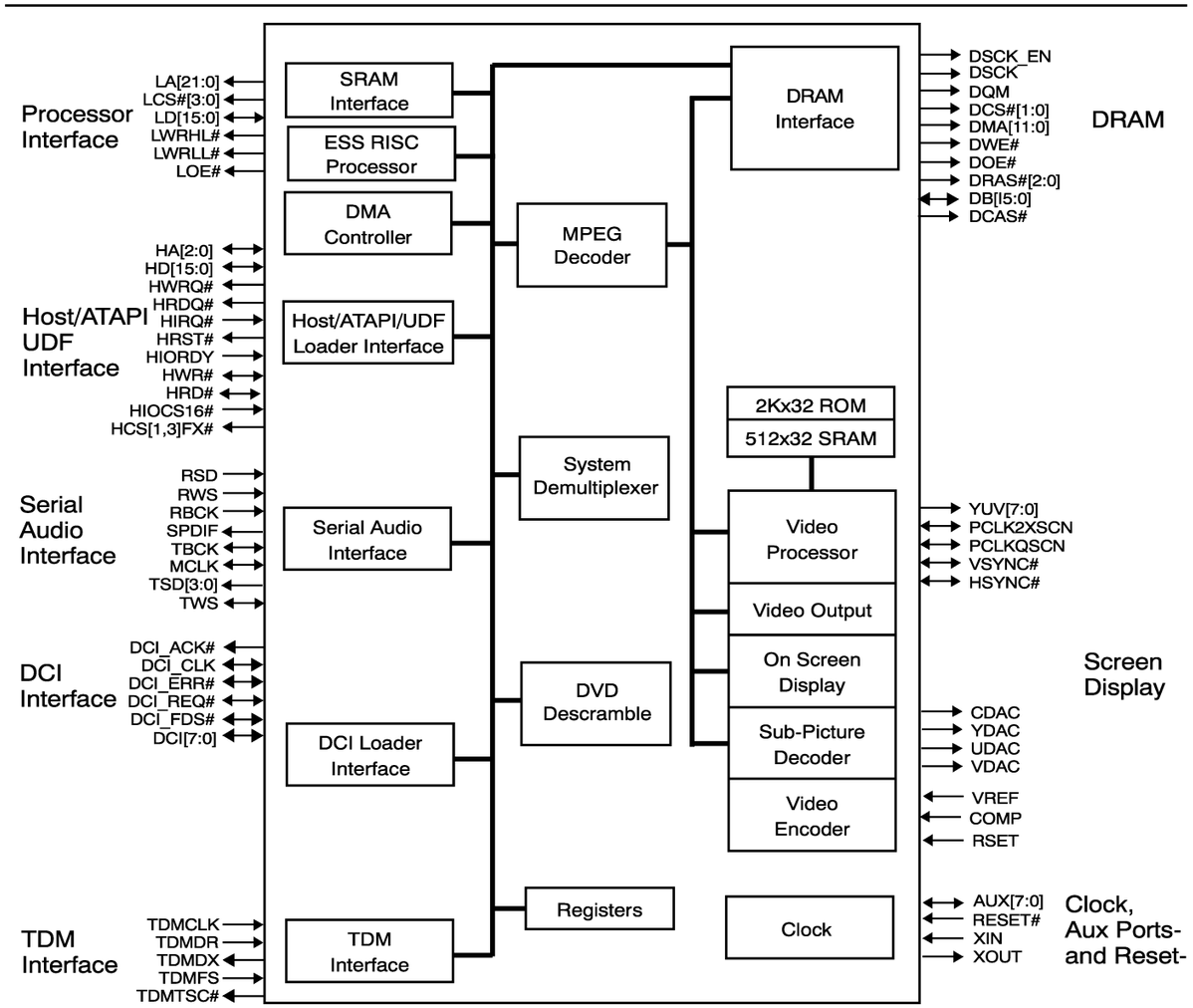
DVD PROCESSOR
ES6028F

ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
AUX[2]	162	I/O	Auxiliary port 2.
IOW#		O	I/O Write strobe.
AUX[3]	165	I/O	Auxiliary port 3.
IOR#		O	I/O Read strobe.
AUX[7:3]	169:166	I/O	Auxiliary ports 7:3.
LOE#	179	O	Device output enable.
LCS[3:0]#	176:173	O	Chip select [3:0].
LD[15:0]	197:194, -191:185, -182:178	I/O	EPROM device data bus.
LWRLL#	198	O	Device low-byte write enable.
LWRHL#	199	O	Device high-byte write enable.
CAMIN0	202	I	Camera YUV 0.
CAMIN1	203	I	Camera YUV 1.

8-9

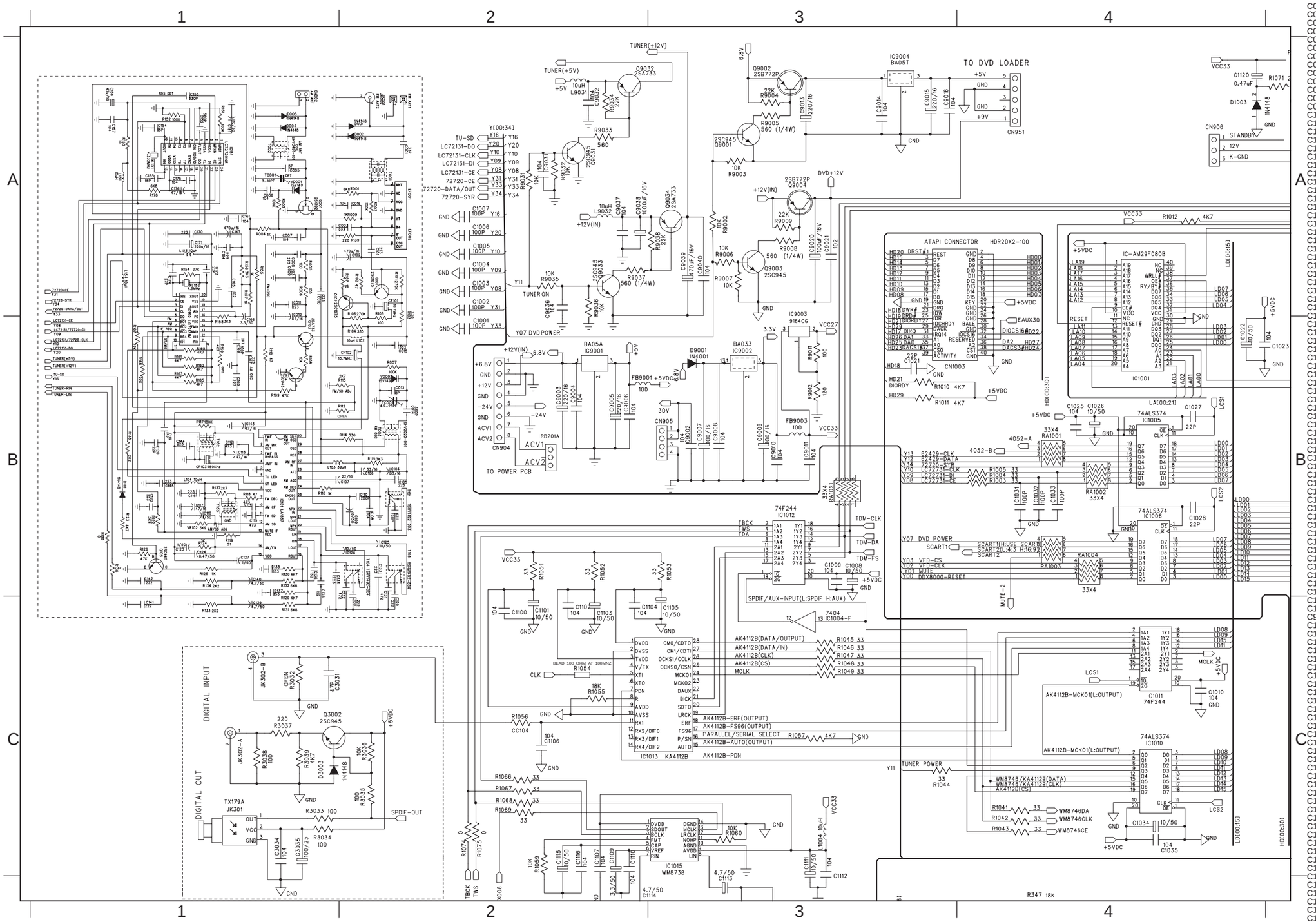
DVD PROCESSOR
ES6028F



Vibratto Block Diagram

8-10

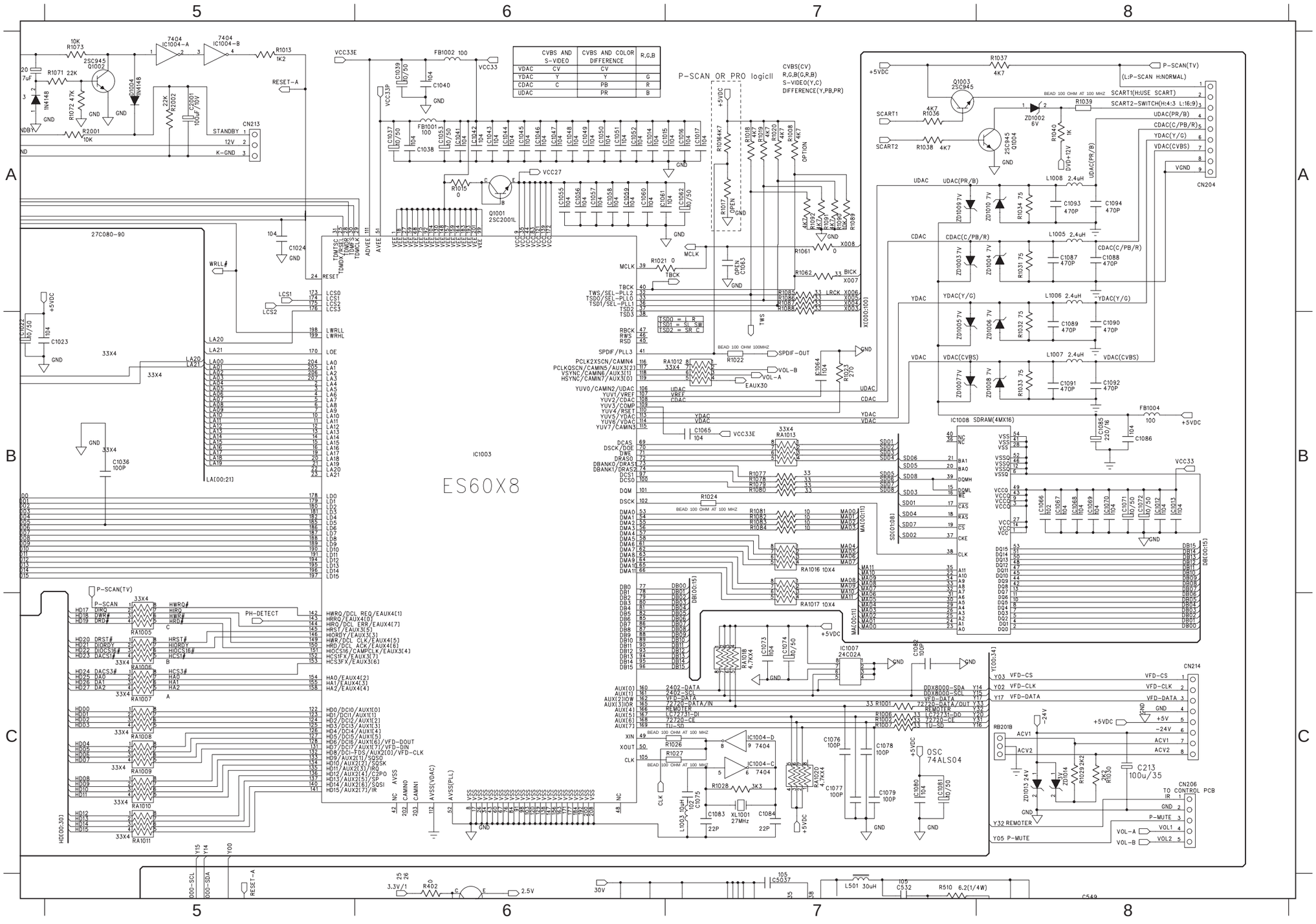
CIRCUIT DIAGRAM (TOP LEFT)



C001	A2	C3035	C1	R119	B1
C003	A2	C9002	B3	R122	B1
C005	A1	C9003	B2	R123	B1
C006	A1	C9004	B2	R124	B1
C007	A1	C9005	B2	R125	B1
C008	A1	C9006	B2	R126	B1
C009	A1	C9007	B3	R129	C1
C010	A1	C9008	B3	R130	B1
C011	A1	C9009	B3	R131	C1
C012	B1	C9010	B3	R132	B1
C014	B2	C9011	B3	R133	C1
C015	B2	C9013	A3	R134	B1
C016	A2	C9014	A3	R135	B1
C101	A2	C9015	A3	R136	B1
C102	A2	C9016	A3	R137	B1
C104	B2	C9020	A3	R138	B1
C106	B2	C9021	A3	R139	12
C107	B2	C9031	A2	R151	A1
C108	B2	C9032	A2	R154	A1
C109	B2	C9036	A2	R153	A1
C110	B2	C9037	A2	R155	A1
C111	B2	C9038	A2	R156	A1
C112	B1	C9039	A3	R157	A1
C113	B1	C9040	A3	R158	B1
C114	B1	CF101	A2	R159	B1
C115	B1	CF102	B2	R160	B1
C116	B1	CF1034	B1	R161	B1
C117	B1	CN002	A1	R162	B1
C118	B1	CN1003	B3	R163	B1
C119	B1	CN904	B2	R165	B1
C120	B1	CN905	B3	R167	B2
C122	B1	CN906	A4	R168	B2
C123	B1	CN951	A4	R170	A1
C124	B1	D001	A2	R1003	B4
C125	B2	D002	A2	R1004	B4
C126	B2	D003	A1	R1005	B4
C127	B1	D004	A1	R1010	B3
C129	C2	D101	B1	R1011	B3
C130	C2	D1003	A4	R1012	A4
C131	B2	D3003	C1	R1041	C4
C132	B2	D9001	B3	R1042	C4
C133	B2	D9002	B2	R1043	C4
C134	B5	EF001	A2	R1044	C3
C135	B1	EF002	A2	R1045	C3
C136	B1	FB9001	B2	R1046	C3
C137	B1	FB9003	B3	R1047	C3
C138	B1	IC151	A1	R1048	C3
C139	C1	IC152	A1	R1049	C3
C140	B1	IC1001	B4	R1051	B2
C141	C1	IC1004-FC	3	R1052	B2
C142	B1	IC1005	B4	R1053	B3
C143	B1	IC1006	B4	R1054	C2
C144	B1	IC1010	C4	R1055	C2
C145	B1	IC1011	C4	R1056	C2
C151	A1	IC1012	B3	R1057	C3
C153	A1	IC1013	C3	R1059	C2
C154	A1	IC1015	C3	R1060	C3
C155	A1	IC9001	B2	R1066	C2
C156	A1	IC9002	B3	R1067	C2
C157	A1	IC9003	A3	R1068	C2
C163	A1	IC9004	A3	R1069	C2
C164	A1	JK001	A2	R1074	C2
C165	A1	JK002	A2	R1075	C2
C166	B1	JK301	C1	R3038	C1
C167	B1	JK302-A	C1	R3039	C1
C168	B1	JK302-B	C1	R9002	A3
C169	B1	L102	B2	R9003	A3
C170	A1	L103	B1	R9004	A3
C171	A1	L104	B1	R9005	A3
C173	A1	L151	A1	R9006	A3
C174	A1	L153	A1	R9007	A3
C175	A1	L154	A1	R9008	A3
C176	A1	L1004	C3	R9009	A3
C903	A2	L9031	A2	R9011	B3
C1001	B2	L9032	A2	R9012	B3
C1002	A2	Q001	A1	R3032	C1
C1003	A2	Q101	A2	R3033	C1
C1004	A2	Q102	A1	R3034	C1
C1005	A2	Q103	B1	R3035	C1
C1006	A2	Q104	B1	R3036	C1
C1007	A2	Q105	B1	R3037	C1
C1008	B3	Q3002	C1	R9031	A2
C1009	B3	Q9001	A3	R9032	A2
C1010	C4	Q9002	A3	R9033	A2
C1028	B4	Q9003	A3	R9034	A2
C1031	B4	Q9004	A3	R9035	A2
C1032	B4	Q9031	A2	R9036	A2
C1033	B4	Q9032	A2	R9037	A2
C1034	C4	Q9033	A2	R9038	A3
C1035	C4	Q9034	A3	RA1001	B4
C1100	C2	R001	A2	RA1002	B4
C1101	C2	R002	A2	RA1003	B4
C1102	C2	R003	A1	RA1004	B4
C1103	C2	R004	A1	RB201A	B2
C1104	C2	R005	A1	T001	A2
C1105	C3	R007	B2	T003	B2
C1106	C2	R101	A2	T101	B2
C1107	C2	R102	A2	T102	B1
C1109	C2	R103	A2	T103	B2
C1110	C2	R104	B2	T104	B2
C1111	C3	R105	A2	T105	B1
C1115	C2	R106	A2	T002	A1
C1116	C2	R107	A2	TC001	A1
C1021	B3	R108	B1	TC002	B2
C1022	B4	R109	B1	VD001	A1
C1023	B4	R110	B1	VD002	B2
C1025	B4	R112	B2	VR102	B1
C1026	B4	R113	B2	XL151	A1
C1027	B4	R114	B2	XL152	A1
C1120	A4	R115	B2		
C3031	C1	R116	B1		
C3034	C1	R117	B1		

8-11

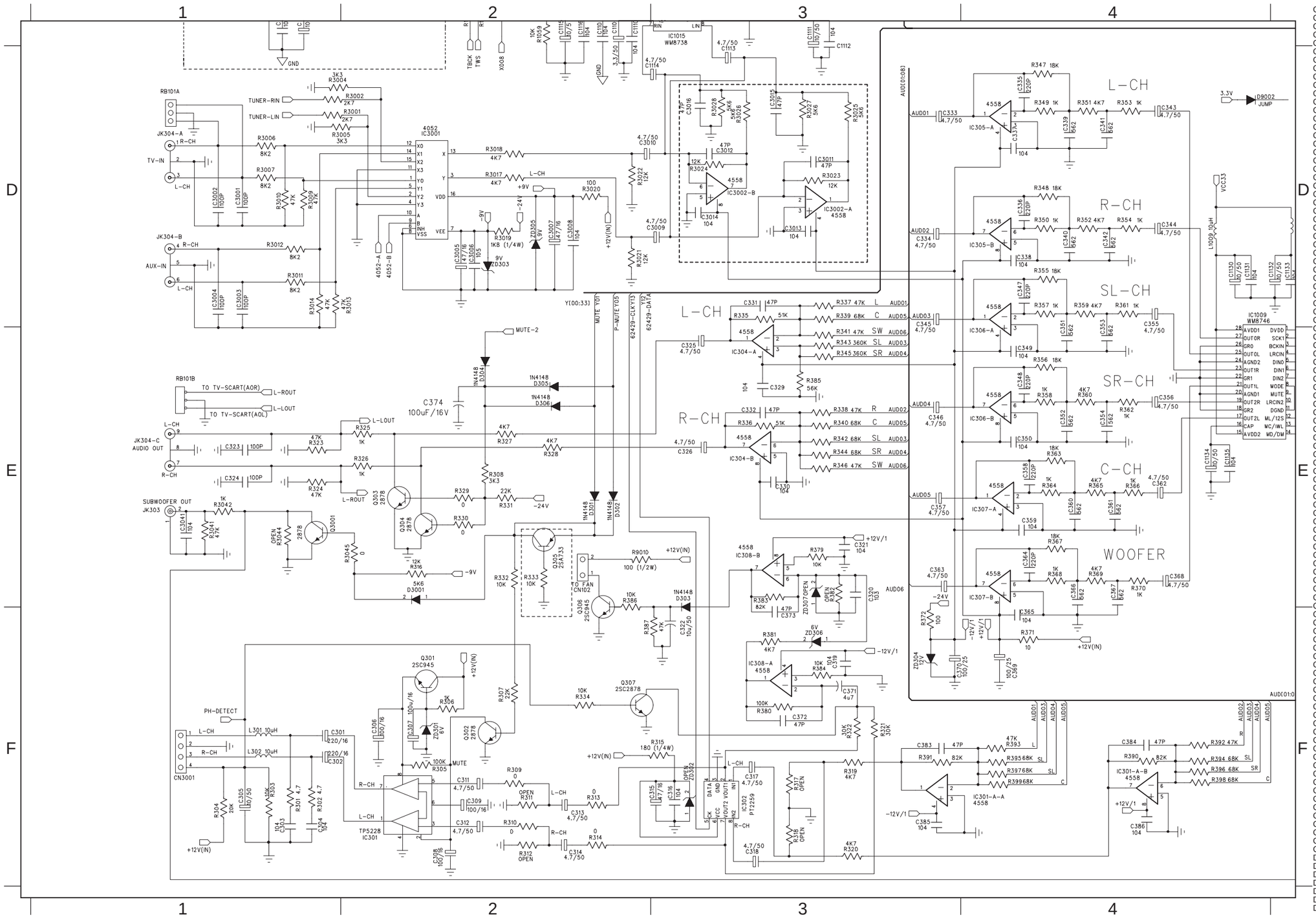
CIRCUIT DIAGRAM (TOP RIGHT)



C213	C8	R1028	C7
C1012	B8	R1029	C8
C1013	B8	R1030	C8
C1014	A6	R1031	A8
C1015	A6	R1032	B8
C1016	A7	R1033	B8
C1017	A7	R1034	A8
C1023	B5	R1036	A7
C1024	A5	R1037	A8
C1036	B5	R1038	A7
C1037	A6	R1039	A8
C1038	A6	R1040	A8
C1039	A6	R1061	A7
C1040	A6	R1062	A7
C1041	A6	R1071	A5
C1042	A6	R1072	A5
C1043	A6	R1073	A5
C1044	A6	R1077	B7
C1045	A6	R1078	B7
C1046	A6	R1079	B7
C1047	A6	R1080	B7
C1048	A6	R1081	B7
C1049	A6	R1082	B7
C1050	A6	R1083	B7
C1051	A6	R1084	B7
C1052	A6	R1085	A7
C1053	A6	R1086	A7
C1055	A6	R1087	A7
C1056	A6	R1088	A7
C1057	A6	R1089	A7
C1058	A6	R1090	A7
C1059	A6	R1091	A7
C1060	A6	R1092	A7
C1061	A6	R2001	A5
C1062	A7	R2002	A5
C1063	A7	RA1005	C5
C1064	B7	RA1006	C5
C1065	B7	RA1007	C5
C1066	B8	RA1008	C5
C1067	B8	RA1009	C5
C1068	B8	RA1010	C5
C1069	B8	RA1011	C5
C1070	B8	RA1012	B7
C1071	B8	RA1013	B7
C1072	B8	RA1016	B7
C1073	C7	RA1017	C7
C1074	C7	RA1018	C7
C1075	C7	RA1020	C7
C1076	C7	RB201B	C8
C1077	C7	XL1001	C7
C1078	C7	ZD1002	A8
C1079	C7	ZD1003	A7
C1080	C7	ZD1004	A8
C1081	C7	ZD1005	B7
C1082	C7	ZD1006	B8
C1083	C7	ZD1007	B7
C1084	C7	ZD1008	B8
C1085	B8	ZD1009	A7
C1086	B8	ZD1010	A8
C1087	A8	ZD1013	C8
C1088	A8	ZD1014	C8
C1089	B8		
C1090	B8		
C1091	B8		
C1092	B8		
C1093	A8		
C1094	A8		
C2001	A5		
CN204	A8		
CN206	C8		
CN213	A5		
CN214	C8		
D1004	A5		
FB1001	A6		
FB1002	A6		
FB1004	B8		
IC1003	B6		
IC1004-A	A5		
IC1004-B	A5		
IC1004-C	C7		
IC1004-D	C7		
IC1007	C7		
IC1008	B7		
L1003	C7		
L1005	A8		
L1006	A8		
L1007	B8		
L1008	A8		
Q1001	A6		
Q1002	A5		
Q1003	A7		
Q1004	A7		
R1001	C7		
R1002	C7		
R1006	C7		
R1007	C7		
R1008	A7		
R1013	A5		
R1015	A6		
R1016	A7		
R1017	A7		
R1018	A7		
R1019	A7		
R1020	A7		
R1021	A6		
R1022	B7		
R1023	B7		
R1024	B7		
R1026	C6		
R1027	C7		

8-12

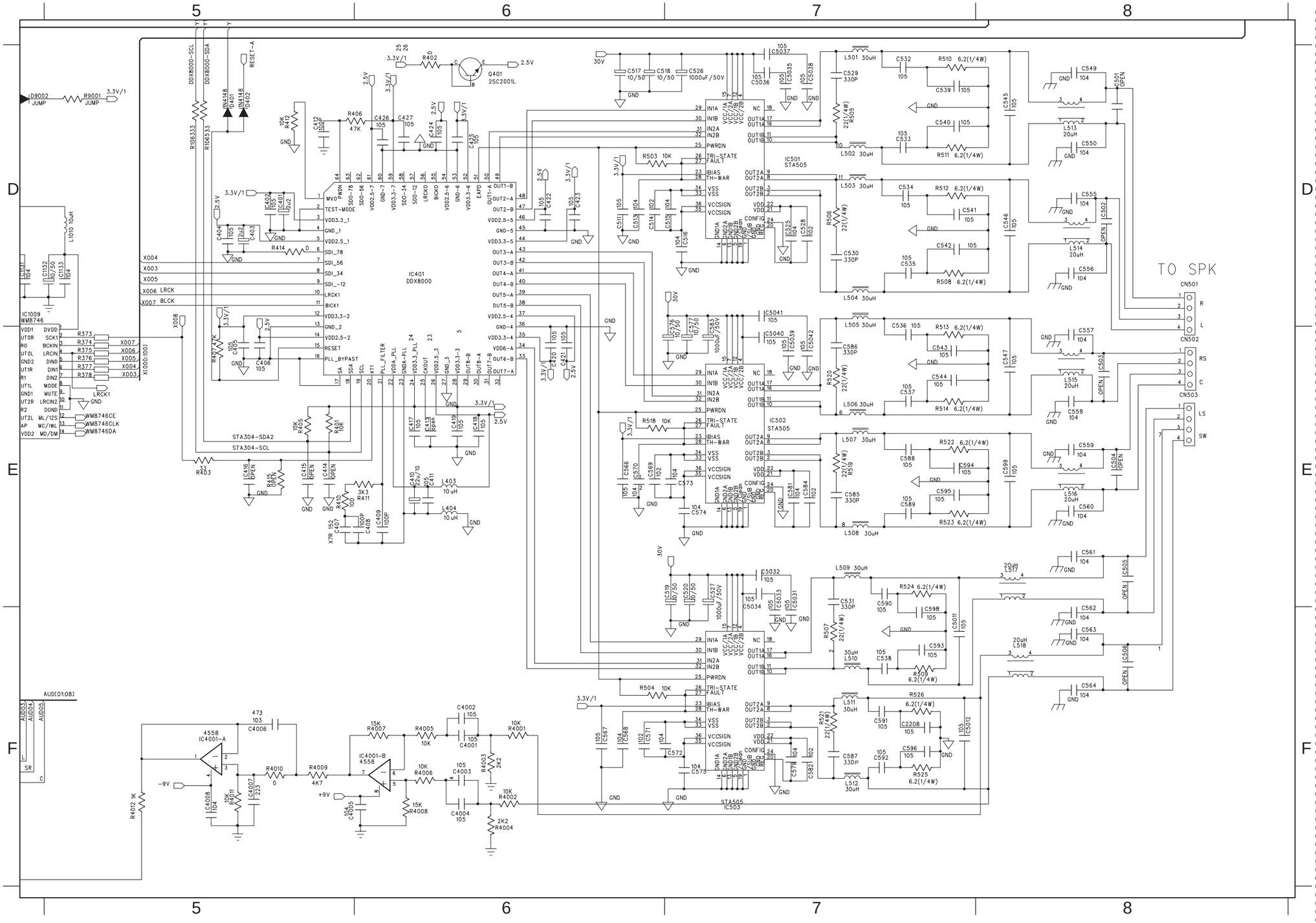
CIRCUIT DIAGRAM (BOTTOM LEFT)



C301	F1	D9002	D4	R381	F3
C302	F1	IC301	F2	R382	E3
C303	F1	IC302	F3	R383	E3
C304	F1	IC301-A-A	F4	R384	F3
C305	F1	IC301-A-B	F4	R385	E3
C306	E2	IC304-A	E3	R386	E2
C307	F2	IC304-B	E3	R387	F2
C308	F2	IC305-A	D4	R390	F4
C309	F2	IC305-B	D4	R391	F3
C311	F2	IC306-A	E4	R392	F4
C312	F2	IC306-B	E4	R393	F4
C313	F2	IC307-A	E4	R394	F4
C314	F2	IC307-B	E4	R395	F4
C315	F3	IC308-A	F3	R396	F4
C316	F3	IC308-B	E3	R397	F4
C317	F3	IC1009	D4	R398	F4
C318	F3	IC3001	D2	R399	F4
C319	F3	IC3002-A	D3	R3001	D2
C320	E3	IC3002-B	D3	R3002	D2
C321	E3	JK303	D1	R3004	D1
C322	F3	JK304-A	D1	R3005	D1
C323	E1	JK304-B	D1	R3006	D1
C324	E1	JK304-C	E1	R3007	D1
C325	E3	L301	F1	R3009	D1
C326	E3	L302	F1	R3010	D1
C329	E3	L1009	D4	R3011	D1
C330	E3	Q301	F2	R3012	D1
C331	D3	Q302	F2	R3013	D2
C332	E3	Q303	E2	R3014	D1
C333	D3	Q304	E2	R3017	D2
C334	D3	Q305	E2	R3018	D2
C335	D4	Q306	E2	R3019	D2
C336	D4	Q307	F2	R3020	D2
C337	D4	Q3001	E1	R3021	D2
C338	D4	R301	F1	R3022	D2
C339	D4	R302	F1	R3023	D3
C340	D4	R303	F1	R3024	D3
C341	D4	R304	F1	R3025	D3
C342	D4	R305	F2	R3026	D3
C343	D4	R306	F2	R3027	D3
C344	D4	R307	F2	R3028	D3
C345	D3	R308	E2	R3041	E1
C346	E3	R309	F2	R3042	E1
C347	D4	R310	F2	R3044	E1
C348	E4	R311	F2	R3045	E2
C349	E4	R312	F2	R9010	E2
C350	E4	R313	F2	RB101A	D1
C351	E4	R314	F2	RB101B	E1
C352	E4	R315	F3	ZD301	F2
C353	E4	R316	E2	ZD302	F3
C354	E4	R317	F3	ZD303	D2
C355	D4	R318	F3	ZD304	F3
C356	E4	R319	F3	ZD305	D2
C357	E3	R320	F3	ZD306	F3
C358	E4	R321	F3	ZD307	E3
C359	E4	R322	F3		
C360	E4	R323	E1		
C361	E4	R324	E1		
C362	E4	R325	E2		
C363	E3	R326	E2		
C364	E4	R327	E2		
C365	F4	R328	E2		
C366	E4	R329	E2		
C367	E4	R330	E2		
C368	E4	R331	E2		
C369	F4	R332	E2		
C370	F3	R333	E2		
C371	F3	R334	F2		
C372	F3	R335	D3		
C373	F3	R336	D3		
C374	E2	R337	D3		
C383	F3	R338	E3		
C384	F4	R339	D3		
C385	F3	R340	E3		
C386	F4	R341	E3		
C1112	D3	R342	E3		
C1113	D3	R343	E3		
C1114	D3	R344	E3		
C1130	D4	R345	E3		
C1131	D4	R346	E3		
C1134	E4	R347	D4		
C1135	E4	R348	D4		
C3001	D1	R349	D4		
C3002	D1	R350	D4		
C3003	D1	R351	D4		
C3004	D1	R352	D4		
C3005	D2	R353	D4		
C3006	D2	R354	D4		
C3007	D2	R355	D4		
C3008	D2	R356	E4		
C3009	D3	R357	D4		
C3010	D2	R358	E4		
C3011	D3	R359	D4		
C3012	D3	R360	E4		
C3013	D3	R361	D4		
C3014	D3	R362	E4		
C3015	D3	R363	E4		
C3016	D3	R364	E4		
C3041	E1	R365	E4		
CN102	E2	R366	E4		
CN3001	F1	R367	E4		
D301	E2	R368	E4		
D302	E2	R369	E4		
D303	E3	R370	E4		
D304	E2	R371	F4		
D305	E2	R372	F3		
D306	E2	R379	E3		
D3001	E2	R380	F3		

8-13

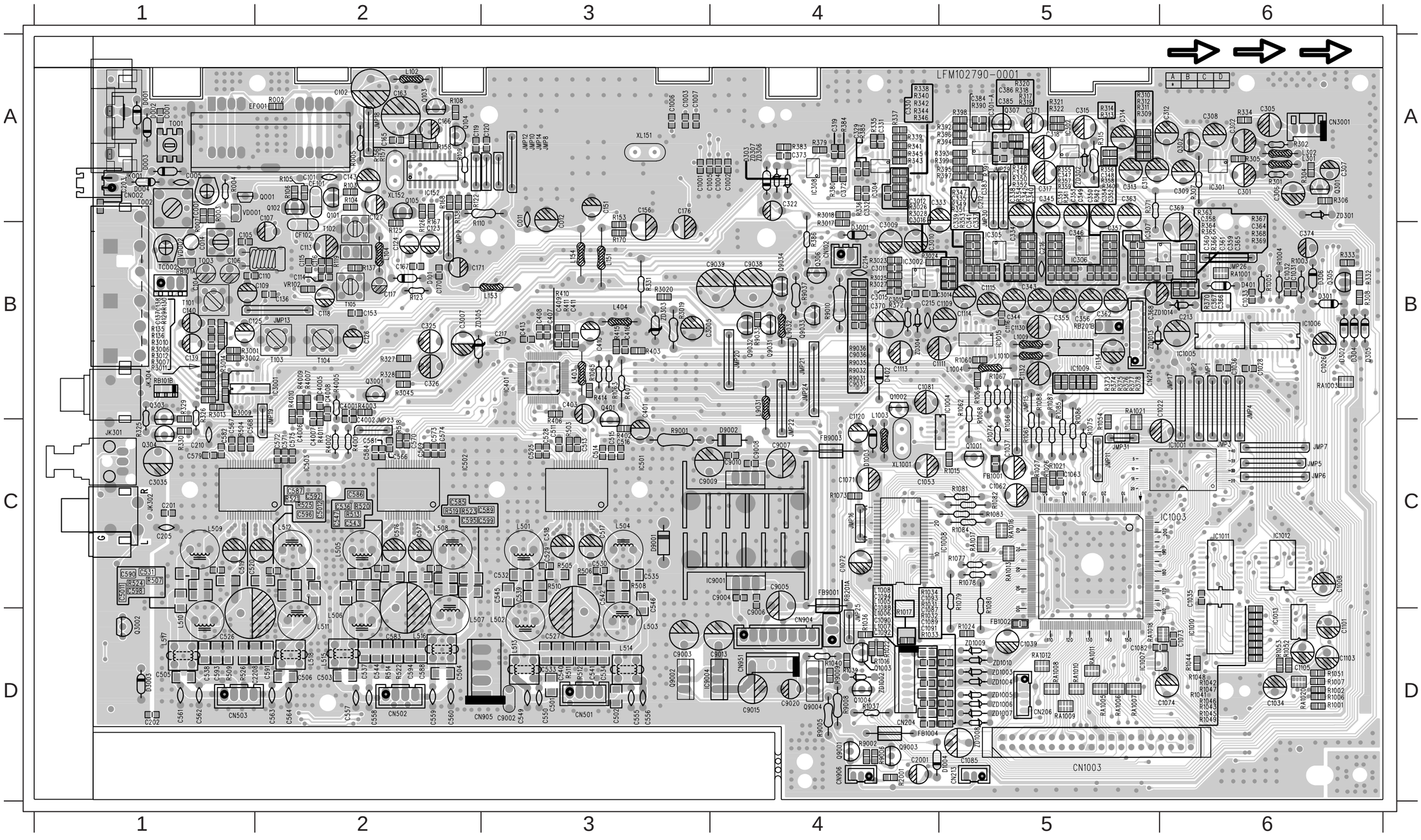
CIRCUIT DIAGRAM (BOTTOM RIGHT)



C401	D5	C1132	D5
C402	D5	C1133	D5
C403	D5	C2208	F7
C404	D5	C4001	F6
C405	E5	C4002	F6
C406	E5	C4003	F6
C407	E5	C4004	F6
C408	E6	C4005	F5
C409	E6	C4006	F5
C410	E6	C4007	F5
C411	E6	C4008	F5
C412	D5	C5011	F7
C413	E6	C5012	F7
C414	E5	C5031	E7
C415	E5	C5032	E7
C416	E5	C5033	E7
C417	E6	C5034	E7
C418	E6	C5035	D7
C419	E6	C5036	D7
C418	E6	C5037	D7
C419	E6	C5038	D7
C420	E6	C5039	E7
C421	E6	C5040	E7
C422	D6	C5041	D7
C423	D6	C5042	E7
C424	D6	CN501	D8
C425	D6	CN502	E8
C426	D6	CN503	E8
C427	D6	D401	D5
C501	D8	D402	D5
C502	D8	IC401	D6
C503	E8	IC501	D7
C504	E8	IC502	E7
C505	E8	IC503	F7
C506	F8	IC4001-A	F5
C511	D6	IC4001-B	F6
C513	D6	L403	E6
C514	D6	L404	E6
C515	D7	L501	D7
C516	D7	L502	D7
C517	D6	L503	D7
C518	D6	L504	D7
C519	E7	L505	D7
C520	E7	L506	E7
C525	D7	L507	E7
C526	D7	L508	E7
C527	E7	L509	E7
C528	D7	L510	F7
C529	D7	L511	F7
C530	D7	L512	F7
C531	E7	L513	D8
C532	D7	L514	D8
C533	D7	L515	E8
C534	D7	L516	E8
C535	D7	L517	E8
C536	E7	L518	F8
C537	E7	L1010	D5
C538	F7	Q401	D6
C539	D7	R373	E5
C540	D7	R374	E5
C541	D7	R375	E5
C542	D7	R376	E5
C543	E7	R377	E5
C544	E7	R378	E5
C545	D8	R401	E5
C546	D8	R402	D6
C547	E8	R405	E5
C549	D8	R406	D5
C550	D8	R407	E5
C555	D8	R410	E5
C556	D8	R411	E6
C557	D8	R412	D5
C558	E8	R414	D5
C559	E8	R415	E5
C560	E8	R503	D6
C561	E8	R504	F6
C562	F8	R505	D7
C563	F8	R506	D7
C564	F8	R507	F7
C566	E6	R508	D7
C567	F6	R509	D7
C568	F6	R510	D7
C569	E6	R511	D7
C570	E6	R512	D7
C571	F6	R513	E7
C572	F7	R514	E7
C573	E7	R518	E6
C574	E7	R519	E7
C575	F7	R520	E7
C576	E7	R521	F7
C577	E7	R522	E7
C579	F7	R523	E7
C581	E7	R524	E7
C582	F7	R525	F7
C583	E7	R526	F7
C584	E7	R1063	D5
C585	E7	R1065	D5
C586	E7	R4001	F6
C587	F7	R4002	F6
C588	E7	R4003	F6
C589	E7	R4004	F6
C590	F7	R4005	F6
C591	E7	R4006	F6
C592	F7	R4007	F6
C593	F7	R4008	F6
C594	E7	R4009	F5
C595	E7	R4010	F5
C596	F7	R4011	F5
C598	F7	R4012	F5
C599	E8	R9001	D5

8-14

PCB LAYOUT (COMPONENT VIEW)



LAYOUT MAPPING (COMPONENT VIEW)

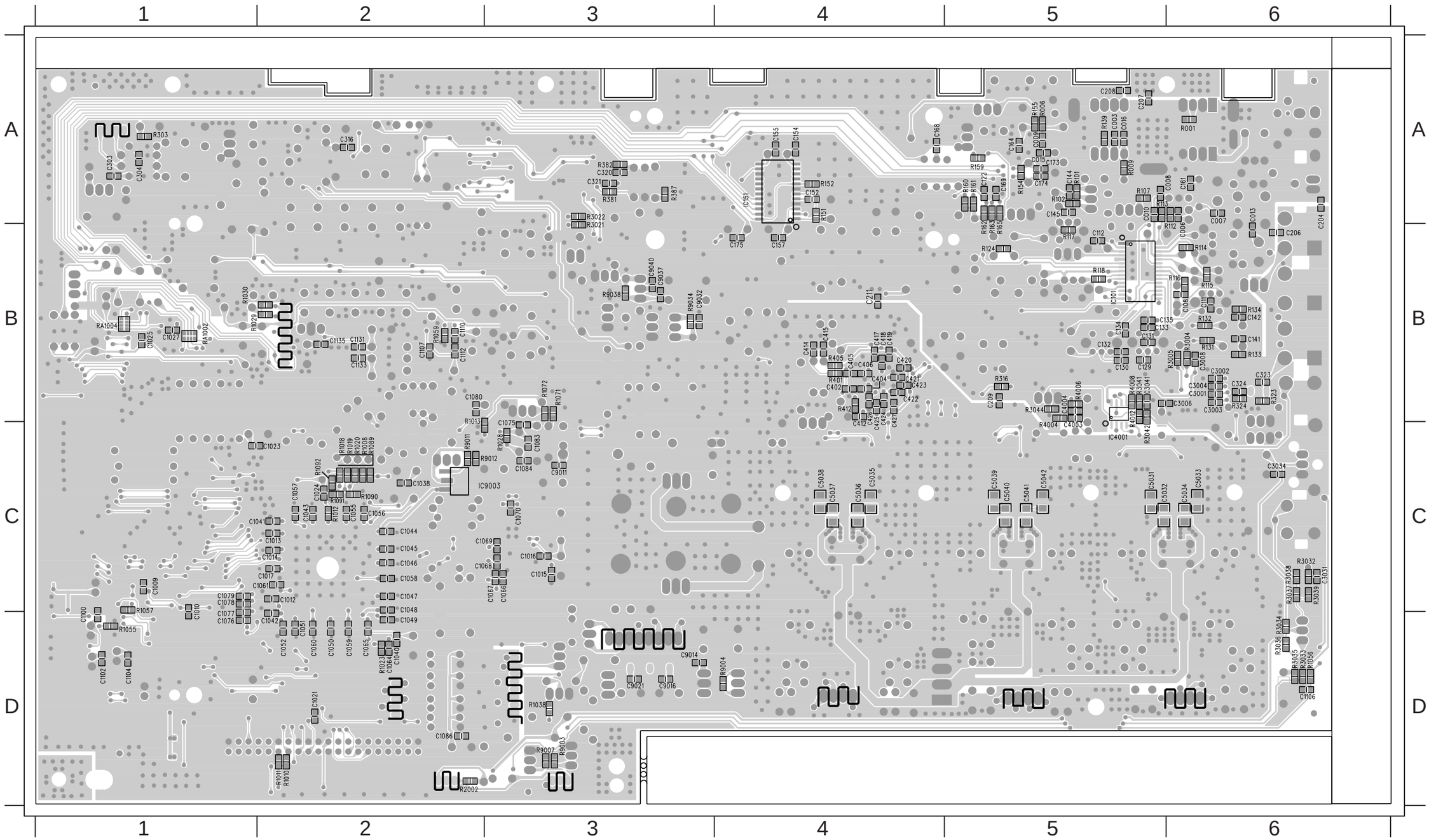
C001	A1	C369	A6	C1031	B6	D9002	C4	R007	B1	R395	A5	R3025	B4		
C005	A1	C370	B4	C1032	B6	EF001	A2	R103	A2	R396	A5	R3026	A4		
C011	A3	C371	A5	C1033	B6	FB1001	C5	R104	A2	R397	A5	R3027	B4		
C012	A3	C372	A4	C1034	D6	FB1002	D5	R105	A2	R398	A5	R3028	A4		
C014	B1	C373	A4	C1035	C6	FB1004	D4	R106	A2	R399	A5	R3045	B2		
C101	A2	C374	B6	C1036	B6	FB9001	C4	R108	A2	R402	C3	R4001	C2		
C102	A2	C383	A5	C1037	C5	FB9003	C4	R109	A2	R403	B3	R4002	C2		
C104	B1	C384	A5	C1039	D5	IC152	A2	R110	A2	R406	C3	R4003	B2		
C105	B1	C385	A5	C1053	C4	IC301	A6	R119	B2	R407	B3	R4005	B2		
C106	B1	C386	A5	C1062	C5	IC301-A	A5	R122	A2	R410	B3	R4007	B2		
C107	A2	C401	B3	C1063	C5	IC302	A5	R123	B2	R411	B3	R4009	B2		
C109	B2	C403	B3	C1071	C4	IC304	A4	R125	B2	R414	B3	R4010	B2		
C110	B2	C407	B3	C1072	C4	IC305	B5	R126	B2	R415	B3	R4011	C2		
C113	B2	C408	B3	C1073	D6	IC306	B5	R129	B1	R503	C3	R9001	C3		
C114	B2	C409	B3	C1074	D6	IC307	B5	R130	B1	R504	C1	R9002	D4		
C115	B2	C410	B3	C1081	B4	IC308	A4	R135	B1	R505	C3	R9005	D4		
C116	B2	C411	B3	C1082	D5	IC401	B3	R136	B1	R506	C3	R9006	D4		
C117	B2	C413	B3	C1085	D5	IC501	C3	R137	B2	R507	C1	R9008	D4		
C118	B2	C416	B3	C1087	D4	IC502	C2	R138	A2	R508	C3	R9009	D4		
C119	A2	C501	D3	C1089	D4	IC503	C2	R153	A3	R509	D1	R9010	B4		
C120	A3	C502	D3	C1090	D4	IC1001	C6	R156	A2	R510	C3	R9031	B4		
C123	B2	C503	D2	C1091	D4	IC1003	C6	R157	A2	R511	D3	R9032	B4		
C124	B2	C504	D2	C1092	D4	IC1004	B5	R158	A2	R512	D3	R9033	B4		
C125	B1	C505	D1	C1093	C4	IC1005	B6	R167	B2	R513	C2	R9035	B4		
C126	B2	C506	D2	C1094	C4	IC1006	B6	R168	A2	R514	D2	R9036	B4		
C127	A2	C511	C3	C1101	D6	IC1007	D5	R170	B3	R518	C2	R9037	B4		
C136	B2	C513	C3	C1103	D6	IC1008	C5	R301	A6	R519	C2	RA1001	B6		
C137	B1	C514	C3	C1105	D6	IC1009	B5	R302	A6	R520	C2	RA1003	B6		
C138	B1	C515	C3	C1109	B5	IC1010	D6	R304	A6	R521	C2	RA1005	D5		
C139	B1	C516	C3	C1120	B4	IC1011	C6	R305	A6	R522	D2	RA1006	D5		
C140	B1	C517	C3	C1130	B5	IC1012	C6	R306	A6	R523	C2	RA1007	D5		
C143	A2	C518	C3	C1132	B5	IC1013	D6	R307	A6	R524	C1	RA1008	D5		
C151	A3	C519	C1	C1134	B5	IC1015	B5	R308	B6	R525	C2	RA1009	D5		
C153	B2	C520	C1	C1111	B5	IC3001	B2	R309	A5	R526	D1	RA1010	D5		
C156	A3	C525	C3	C1113	B4	IC3002	B4	R310	A5	R1001	D6	RA1011	D5		
C163	A2	C526	D1	C1114	B5	IC9001	C4	R311	A5	R1002	D6	RA1012	D5		
C165	A2	C527	D3	C1115	B5	IC9004	D3	R312	A5	R1003	B6	RA1013	C5		
C166	A2	C528	C3	C1116	B5	JK001	A1	R313	A5	R1004	B6	RA1016	C5		
C167	B2	C529	C3	C1134	B5	JK301	C1	R314	A5	R1005	B6	RA1017	C5		
C170	B2	C530	C3	C2001	D4	JK302	C1	R315	A5	R1006	D6	RA1018	D5		
C171	B2	C531	C1	C2208	D2	JK304	B1	R317	A5	R1007	D6	RA1020	B5		
C176	A3	C532	C3	C3005	B3	JMP1	B6	R318	A5	R1015	C5	RA1021	C5		
C201	C1	C533	D3	C3007	B2	JMP2	B6	R319	A5	R1016	D4	RB101A	B1		
C202	D1	C534	D3	C3009	B4	JMP3	C6	R320	A5	R1017	D4	RB101B	B1		
C203	A1	C535	C3	C3010	B4	JMP4	B6	R321	A5	R1021	C5	RB201A	C4		
C205	C1	C536	C2	C3011	B4	JMP5	C6	R322	A5	R1022	D4	RB201B	B5		
C210	C1	C537	D2	C3012	A4	JMP6	C6	R325	C1	R1024	D5	Q001	A2		
C212	A5	C538	D1	C3013	B4	JMP7	C6	R326	B1	R1026	C5	Q101	A2		
C213	B6	C539	C3	C3014	B5	JMP8	A3	R327	B2	R1027	C5	Q102	A2		
C214	B4	C540	D3	C3015	B4	JMP9	B2	R328	B2	R1031	C4	Q103	A2		
C215	B4	C541	D3	C3016	A4	JMP10	A3	R329	B1	R1032	D4	Q104	A2		
C216	B5	C542	C3	C3035	C1	JMP11	C5	R330	C1	R1033	D4	Q105	A2		
C217	B3	C543	C2	C4001	B2	JMP12	A3	R331	B3	R1034	C4	Q301	A6		
C301	A6	C544	D2	C4002	B2	JMP13	B2	R332	B6	R1036	D4	Q302	A6		
C302	A6	C545	C3	C4005	B2	JMP14	A3	R333	B6	R1037	D4	Q303	B1		
C306	A6	C546	C3	C4006	C2	JMP15	B5	R334	A6	R1039	D4	Q304	C1		
C305	A6	C547	C2	C4007	C2	JMP16	C4	R335	A4	R1040	D4	Q305	B6		
C307	A6	C549	D3	C4008	B2	JMP17	B6	R336	A4	R1041	D6	Q306	B4		
C308	A6	C550	D3	C5011	C1	JMP18	A2	R337	A4	R1042	D6	Q307	A5		
C309	A6	C555	D3	C5012	C2	JMP19	B2	R338	A4	R1043	D6	Q401	B3		
C311	A5	C556	D3	C9002	D3	JMP20	B4	R339	A4	R1044	D6	Q1001	C5		
C312	A6	C557	D2	C9003	D3	JMP21	B4	R340	A4	R1045	D6	Q1002	B4		
C313	A5	C558	D2	C9004	C4	JMP22	C4	R341	A4	R1046	D6	Q1003	D4		
C314	A5	C559	D2	C9005	C4	JMP23	C2	R342	A4	R1047	D6	Q1004	D4		
C315	A5	C560	D2	C9006	D4	JMP24	B4	R343	A4	R1048	D6	Q3001	B2		
C317	A5	C561	D1	C9007	C4	JMP25	D4	R344	A4	R1049	D6	Q3002	D1		
C318	A5	C562	D1	C9008	C4	JMP26	B6	R345	A4	R1051	D6	Q9001	D4		
C319	A4	C563	D2	C9009	C4	JMP29	A5	R346	A4	R1052	D6	Q9002	D3		
C322	A4	C564	D2	C9010	C4	JMP30	A5	R347	A5	R1053	D6	Q9003	D4		
C325	B2	C566	C2	C9013	D4	JMP31	C5	R348	A5	R1054	C5	Q9004	D4		
C326	B2	C567	C1	C9015	D4	L102	A2	R349	A5	R1060	B5	Q9031	B4		
C329	A4	C568	C1	C9020	D4	L104	B2	R350	A5	R1061	C5	Q9032	B4		
C330	A4	C569	C2	C9031	B4	L151	B3	R351	A5	R1062	B5	Q9033	B4		
C331	A4	C570	C2	C9036	B4	L153	B3	R352	A5	R1063	B3	Q9034	B4		
C332	A4	C571	C2	C9038	B4	L154	B3	R353	A5	R1065	B3	TC001	A1		
C333	A5	C572	C2	C9039	B4	L301	A6	R354	A5	R1066	C5	TC002	B1		
C334	B5	C573	C2	CF101	A2	L302	A6	R355	A5	R1067	B5	T001	A1		
C335	A5	C574	C2	CF102	B2	L403	B3	R356	A5	R1068	B5	T002	A1		
C336	A5	C575	C2	CN002	A1	L404	B3	R357	A5	R1069	B5	T003	B1		
C337	A5	C576	C2	CN102	B4	L501	C3	R358	A5	R1073	C4	T101	B1		
C338	A5	C577	C2	CN204	D4	L502	D3	R359	A5	R1074	C5	T102	B2		
C339	A5	C579	C1	CN206	D5	L503	D3	R360	A5	R1075	C5	T103	B2		
C340	A5	C581	C2	CN213	D5	L504	C3	R361	A5	R1077	C5	T104	B2		
C341	A5	C582	C1	CN214	B5	L505	C2	R362	A5	R1078	C5	T105	B2		
C342	A5	C583	D2	CN501	D3	L506	D2	R363	A6	R1079	C5	VD001	A1		
C343	B5	C584	C2	CN502	D2	L507	D2	R364	B6	R1080	C5	VD002	B1		
C344	B5	C585	C2	CN503	D1	L508	C2	R365	B6	R1081	C5	VR102	B2		
C345	A5	C586	C2	CN904	D4	L509	C1	R366	B6	R1082	C5	XL151	A3		
C346	B5	C587	C2	CN905	D3	L510	D1	R367	A6	R1083	C5	XL152	A2		
C347	A5	C588	D2	CN906	D4	L511	D2	R368	B6	R1084	C5	XL1001	C4		
C348	A5	C589	C3	CN951	D4	L512	C2	R369	B6	R1085	B5	ZD301	A6		
C349	A5	C590	C1	CN1003	D5	L513	D3	R370	B6	R1086	B5	ZD302	A5		
C350	A5	C591	D2	CN3001	A6	L514	D3	R371	A5	R1087	B5	ZD303	B3		
C351	A5	C592	C2	D001	A1	L515	D2	R372	B4	R1088	B5	ZD304	B4		
C352	A5	C593	D1	D002	A1	L516	D2	R373	B5	R2001	D4	ZD305	B2		
C353	A5	C594	D2	D003	A1	L517	D1	R374	B5	R3001	B1	ZD306	A4		
C354	A5	C595	C2	D004	A1	L518	D2	R375	B5	R3002	B1	ZD307	A4		
C355	B5	C596	C2	D101	B2	L1003	B4	R376	B5	R3006	B1	ZD1002	D4		
C356	B5	C598	C1	D301	B6	L1004	B5	R377	B5	R3007	B1	ZD1003	D5		
C357	B5	C599	C3	D302	B6	L1005	C4	R378	B5	R3009	B1	ZD1004	D5		
C358	A6	C1001	A3	D303	A4	L1006	D4	R379	A4	R3010	B1	ZD1005	D5		
C359	B6	C1002	A4	D304	B6	L1007	D4	R380	A4	R3011	B1	ZD1006	D5		
C360	B6	C1003	A3	D305	B6	L1008	C4	R383	A4	R3012	B1	ZD1007	D5		
C361	B6	C1004	A4	D306	B6	L1009	B5	R384	A4	R3013	B1	ZD1008	D5		
C362	B5	C1005	A3	D401	B6	L1010	B5	R385	A4	R3014	B1	ZD1009	D5		
C363	A5	C1006	A3	D402	B4	L9031	B4	R386	B4	R3017	B4	ZD1010	D5		
C364	B6	C1007	A3	D1003	C4	L9032	B4	R390	A5	R3018	A4	ZD1013	B5		
C365	B6	C1008	C6	D1004	D5	R002	A2	R391	A5	R3019	B3	ZD1014	B6		
C366	B6	C1022	B6	D3001	B4	R003	A1	R392	A5	R3020	B3				
C367	B6	C1026	B6	D3003	D1	R004	A1	R393	A5	R3023	B4				
C368	B5	C1028	B6	D9001	C3	R005	A2	R394	A5	R3024	B4				

LAYOUT MAPPING (COPPERSIDE VIEW)

C003	A5	C1077	C1	R1089	C2
C006	B6	C1078	C1	R1091	C2
C007	A6	C1079	C1	R1092	C2
C008	A6	C1080	B2	R1090	C2
C009	A5	C1083	C3	R2002	D2
C010	A5	C1084	C3	R3004	B6
C013	A6	C1086	D2	R3005	B6
C015	A5	C1100	C1	R3021	A3
C016	A5	C1102	D1	R3022	A3
C108	B6	C1104	D1	R3032	C6
C111	B6	C1106	D6	R3033	D6
C112	B5	C1107	B2	R3034	D6
C122	A5	C1110	B2	R3035	D6
C129	B5	C1112	B2	R3036	D6
C130	B5	C1131	B2	R3037	C6
C131	B5	C1133	B2	R3038	C6
C132	B5	C1135	B2	R3039	C6
C133	B5	C3001	B6	R3041	B5
C134	B5	C3002	B6	R3042	C5
C135	B5	C3003	B6	R3044	B5
C141	B6	C3004	B6	R4004	C5
C142	B6	C3006	B6	R4006	B5
C144	A5	C3008	B6	R4008	B5
C145	A5	C3031	C6	R4012	B5
C152	A4	C3034	C6	R9003	D3
C154	A4	C3041	B5	R9004	D4
C155	A4	C4003	C5	R9007	D3
C157	B4	C4004	B5	R9011	C2
C161	A6	C5031	C5	R9012	C3
C164	A4	C5032	C5	R9034	B3
C168	A4	C5033	C6	R9038	B3
C169	A5	C5034	C6	RA1002	B1
C173	A5	C5035	C4	RA1004	B1
C174	A5	C5036	C4		
C175	B4	C5037	C4		
C204	A6	C5038	C4		
C206	B6	C5039	C5		
C207	A5	C5040	C5		
C208	A5	C5041	C5		
C209	B5	C5042	C5		
C211	B4	C9011	C3		
C303	A1	C9014	D3		
C304	A1	C9016	D3		
C316	A2	C9021	D3		
C320	A3	C9032	B3		
C321	A3	C9037	B3		
C323	B6	C9040	B3		
C324	B6	IC101	B5		
C402	B4	IC151	A4		
C404	B4	IC4001	C5		
C405	B4	IC9003	C3		
C406	B4	R001	A6		
C412	B4	R006	A5		
C414	B4	R009	A5		
C415	B4	R101	A5		
C417	B4	R102	A5		
C418	B4	R107	D2		
C419	B4	R112	B6		
C420	B4	R113	A5		
C421	B4	R114	B6		
C422	B4	R115	B6		
C423	B4	R116	B6		
C424	B4	R117	B5		
C425	B4	R118	B5		
C426	B4	R124	B5		
C427	B4	R131	B6		
C1009	C1	R132	B6		
C1010	C1	R133	B6		
C1012	C2	R134	B6		
C1013	C2	R139	A5		
C1014	C2	R151	A4		
C1015	C3	R152	A4		
C1016	C3	R154	A5		
C1017	C2	R155	A5		
C1021	D2	R159	A5		
C1023	C2	R160	A5		
C1024	C2	R161	A5		
C1025	B1	R162	A5		
C1027	B1	R163	A5		
C1038	C2	R165	A5		
C1040	D2	R303	A1		
C1041	C2	R316	A5		
C1042	D2	R323	B6		
C1043	C2	R324	B6		
C1044	C2	R381	A3		
C1045	C2	R382	A3		
C1046	C2	R387	A3		
C1047	C2	R401	B4		
C1048	C2	R405	B4		
C1049	D2	R412	B4		
C1050	D2	R1008	C2		
C1051	D2	R1010	D2		
C1052	D2	R1011	D2		
C1055	C2	R1012	C2		
C1056	C2	R1013	B2		
C1057	C2	R1018	C2		
C1058	C2	R1019	C2		
C1059	D2	R1020	C2		
C1060	D2	R1023	D2		
C1061	C2	R1028	C3		
C1064	D2	R1029	B1		
C1065	D2	R1030	B1		
C1066	C3	R1038	D3		
C1067	C3	R1055	D1		
C1068	C3	R1056	D6		
C1069	C3	R1057	C1		
C1070	C3	R1059	B2		
C1075	C3	R1071	B3		
C1076	D1	R1072	B3		

8-17

PCB LAYOUT (COPPERSIDE VIEW)



ELECTRICAL PARTSLIST - MAIN BOARD

- MISCELLANEOUS -

CN002	9965 000 15855	CONNECTOR S2B-XH-A 2P
CN1003	9965 000 15856	CONNECTOR 20X2 P
CN101	9965 000 18015	CONNECTOR 3P
CN102	9965 000 18015	CONNECTOR 3P
CN204	9965 000 17367	CONNECTOR 8P /21S/21R /22S/25S
CN204	9965 000 15895	CONNECTOR 5P /37
CN206	9965 000 15895	CONNECTOR 5P
CN213	9965 000 15900	CONNECTOR 3P
CN214	9965 000 17367	CONNECTOR 8P
CN3001	9965 000 18016	CONNECTOR 4P
CN501	9965 000 18046	CONNECTOR 4P /22S/25S
CN502	9965 000 18046	CONNECTOR 4P /22S/25S
CN503	9965 000 18046	CONNECTOR 4P /22S/25S
CN904	9965 000 17359	CONNECTOR B8B-XH-A 8P
CN905	9965 000 17360	CONNECTOR 4P CL3962WVO
CN906	9965 000 15900	CONNECTOR 3P
CN951	9965 000 15863	CONNECTOR B5B-XH-A 5P
RB101A	9965 000 18048	CON/WIRE 3P 380mm /22S/25S
RB101B	9965 000 18049	CON/WIRE 3P 250mm /22S/25S
JK001	9965 000 15852	FM ANT JACK
JK301	9965 000 18017	TOSK JACK DLT1130
JK302	9965 000 18024	RCA JACK 2P
JK303	9965 000 17363	RCA JACK 1P /21S/21R
JK304	9965 000 17364	AXIAL JACK 6P /21S/21R/37
JK304	9965 000 18047	AXIAL JACK 6P /22S/25S

- CAPACITORS -

TC001	9965 000 15865	COND TRIM 3 - 10PF NP0
TC002	9965 000 15866	COND TRIM 4.2 - 20PF N450
C549	9965 000 15930	COND MULTI 0.1μF 50V 20%
C550	9965 000 15930	COND MULTI 0.1μF 50V 20%
C555	9965 000 15930	COND MULTI 0.1μF 50V 20%
C556	9965 000 15930	COND MULTI 0.1μF 50V 20%
C557	9965 000 15930	COND MULTI 0.1μF 50V 20%
C558	9965 000 15930	COND MULTI 0.1μF 50V 20%
C559	9965 000 15930	COND MULTI 0.1μF 50V 20%
C560	9965 000 15930	COND MULTI 0.1μF 50V 20%
C561	9965 000 15930	COND MULTI 0.1μF 50V 20%
C562	9965 000 15930	COND MULTI 0.1μF 50V 20%
C563	9965 000 15930	COND MULTI 0.1μF 50V 20%
C564	9965 000 15930	COND MULTI 0.1μF 50V 20%

- RESISTORS -

RA1001	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1002	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1003	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1004	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1005	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1006	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1007	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1008	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1009	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1010	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1011	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1012	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1013	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
RA1016	⚠9965 000 12487	RES ARRAY 4* 10Ω 1/10W 5%
RA1017	⚠9965 000 12487	RES ARRAY 4* 10Ω 1/10W 5%
RA1018	⚠9965 000 12488	RES ARRAY 4* 4.7KΩ 1/10W 5%
RA1020	⚠9965 000 12488	RES ARRAY 4* 4.7KΩ 1/10W 5%
RA1021	⚠9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%
VR102	4822 051 20392	3K90 5% 0,1W

- COILS & FILTERS -

XL1001	9965 000 17371	27.0000MHZ HC-49US +/-20PPM
XL152	9965 000 15881	CRYSTAL 4.5 MHZ HC-49/U
L102	9965 000 15871	INDUCTOR 10μH 10%
L103	9965 000 15872	COIL 39 MHZ
L104	9965 000 15871	INDUCTOR 10μHZ 10%
L151	9965 000 15871	INDUCTOR 10μH 10%
L153	9965 000 15871	INDUCTOR 10μH 10%
L154	9965 000 15871	INDUCTOR 10μH 10%
L301	9965 000 15871	INDUCTOR 10μH 10%
L302	9965 000 15871	INDUCTOR 10μH 10%
L403	9965 000 17369	100Ω AT 100MHZ
L403	9965 000 15871	INDUCTOR 10μH 10%
L404	9965 000 17369	100Ω AT 100MHZ
L404	9965 000 15871	INDUCTOR 10μH 10%
L501	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L502	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L503	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L504	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L505	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L506	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L507	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L508	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L509	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L510	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L511	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L512	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
L513	9965 000 16692	20μH D0.5MM 4PIN
L514	9965 000 16692	20μH D0.5MM 4PIN
L515	9965 000 16692	20μH D0.5MM 4PIN
L516	9965 000 16692	20μH D0.5MM 4PIN
L517	9965 000 16692	20μH D0.5MM 4PIN
L518	9965 000 16692	20μH D0.5MM 4PIN

8-18

ELECTRICAL PARTSLIST - MAIN BOARD

- COILS & FILTERS - -

L1003	9965 000 15871	INDUCTOR 10 μH 10%
L1004	9965 000 15871	INDUCTOR 10 μH 10%
L1005	9965 000 18025	2.4 μH 5%
L1006	9965 000 18025	2.4 μH 5%
L1007	9965 000 18025	2.4 μH 5%
L1008	9965 000 18025	2.4 μH 5%
L1009	9965 000 15871	INDUCTOR 10 μH 10%
L1010	9965 000 15871	INDUCTOR 10 μH 10%
L9031	9965 000 15871	INDUCTOR 10 μH 10%
L9032	9965 000 15871	INDUCTOR 10 μH 10%
T001	9965 000 15880	OSC COIL /21S/21R/22S/25S
T002	9965 000 15874	ANT OSC AM 4-6:10T 1-3:86T
T003	9965 000 17370	108μH (796 KHz) COIL
T101	9965 000 15877	BIAS COIL 78 KHz
T102	9965 000 15875	AM IFT 455KHz Q=130
T103	9965 000 15878	BIAS COIL 16 KHz
T104	9965 000 15878	BIAS COIL 16 KHz
T105	9965 000 15879	FM IFT 10.7MHz Q=60 MIN
FB1001	9965 000 17369	100Ω at 100MHz
FB1002	9965 000 17369	100Ω at 100MHz
FB1004	9965 000 12470	BEAD FERITE 100Ω/ at 100MHz
FB9001	9965 000 12470	BEAD FERITE 100Ω/ at 100MHz
FB9002	9965 000 12470	BEAD FERITE 100Ω/ at 100MHz
FB9003	9965 000 12470	BEAD FERITE 100Ω/ at 100MHz
CF101	9965 000 15867	CER FILTER 10.7 MHz
CF102	9965 000 15868	CER FILTER 10.7 MHz
CF103	9965 000 15869	CER FILTER 450 KHz

- DIODES -

D001	4822 130 30621	1N4148
D002	4822 130 30621	1N4148
D003	4822 130 30621	1N4148
D004	4822 130 30621	1N4148
D101	4822 130 30621	1N4148
D301	4822 130 30621	1N4148
D302	4822 130 30621	1N4148
D303	4822 130 30621	1N4148
D304	4822 130 30621	1N4148
D305	4822 130 30621	1N4148
D306	4822 130 30621	1N4148
D402	4822 130 30621	1N4148
D1003	4822 130 30621	1N4148
D1004	4822 130 30621	1N4148
D3001	4822 130 30621	1N4148 /37
D3002	4822 130 30621	1N4148 /37
D3003	4822 130 30621	1N4148
D9001	4822 130 31438	1N4001G
D9002	4822 130 31438	1N4001G
ZD301	4822 130 34167	BZX79-B6V2

DIODES -

ZD302	4822 130 34167	BZX79-B6V2
ZD303	9965 000 14658	ZENER 8.5-8.9V 0.5W
ZD304	9965 000 17375	11.9-12.4V 0.5W
ZD305	9965 000 14658	ZENER 8.5-8.9V 0.5W
ZD306	4822 130 34167	BZX79-B6V2
ZD1002	4822 130 34167	BZX79-B6V2 /21S/21R/22S/25S
ZD1003	4822 130 80272	MTZJ7.5C
ZD1004	4822 130 80272	MTZJ7.5C
ZD1005	4822 130 80272	MTZJ7.5C
ZD1006	4822 130 80272	MTZJ7.5C
ZD1007	4822 130 80272	MTZJ7.5C
ZD1008	4822 130 80272	MTZJ7.5C
ZD1009	4822 130 80272	MTZJ7.5C
ZD1010	4822 130 80272	MTZJ7.5C
ZD1013	9965 000 17373	23.6-24.7V 0.5W
ZD1014	9965 000 17374	2.9-3.1V 0.5W
ZD3001	4822 130 80272	DIODE ZENR 6.9-7.2V 0.5W /37
ZD3002	4822 130 80272	DIODE ZENR 6.9-7.2V 0.5W /37
VD001	4822 130 81673	1SV149
VD002	4822 130 81673	1SV149

- IC & TRANSISTORS -

IC101	9965 000 01369	LA1837 FM/AM IF/MPX IC
IC151	9965 000 17382	LC72720NM /21S/21R/22S/25S
IC152	4822 209 15778	LC72131M
IC301	9965 000 17384	IC TP5228
IC301A	9965 000 15886	IC RC4558D
IC302	9965 000 17385	IC PT2259
IC304	9965 000 15886	IC RC4558D
IC305	9965 000 15886	IC RC4558D
IC306	9965 000 15886	IC RC4558D
IC307	9965 000 15886	IC RC4558D
IC308	9965 000 15886	IC RC4558D
IC401	9965 000 17383	IC STA308
IC501	9965 000 14154	STA505 50W X2
IC502	9965 000 14154	STA505 50W X2
IC503	9965 000 14154	STA505 50W X2
IC902	9965 000 12493	BA033T REGULATOR 3.3V 1A
IC1001	9965 000 12489	EEPROM AM29F080B-90EC
IC1003	9965 000 18026	IC 208P ES6028FW
IC1003	9965 000 18053	IC 208P ES6028 /37
IC1004	9965 000 15883	IC TC74HC04AFN
IC1005	9965 000 12494	74HC374
IC1006	9965 000 12494	74HC374
IC1007	9965 000 15884	IC AT24C02N-10SI-2.7
IC1008	9965 000 12499	SYNCHRO. DRAM 4MX16 Y3V
IC1009	9965 000 15885	IC WM8746 6CH D/A
IC1010	9965 000 12494	74HC374
IC1011	9965 000 17379	IC SN74HCT244DW

ELECTRICAL PARTSLIST - MAIN BOARD

- IC & TRANSISTORS -

IC1012	9965 000 17379	IC SN74HCT244DW
IC1013	9965 000 17380	IC AK4112BVF
IC1015	9965 000 17381	IC WM8738ED
IC3001	9965 000 12510	TC4052BFN CHIP
IC3002	9965 000 15886	IC RC4558D
IC4001	9965 000 15886	IC RC4558D
IC9001	9965 000 12512	BA05T ROHM
IC9004	9965 000 12512	BA05T ROHM
Q001	4822 130 63173	2SK192AY
Q101	4822 130 41595	2SC1675L
Q102	4822 130 41595	2SC1675L
Q103	4822 130 63876	2SA733R
Q104	4822 130 41198	2SC945P
Q105	4822 130 41198	2SC945P
Q301	4822 130 41198	2SC945P
Q302	4822 130 43818	2SC2878-A
Q303	4822 130 43818	2SC2878-A
Q304	4822 130 43818	2SC2878-A
Q305	4822 130 63876	2SA733R /37
Q306	4822 130 41198	2SC945P
Q307	4822 130 43818	2SC2878-A
Q401	4822 130 41651	2SC2001L
Q1001	4822 130 41651	2SC2001L
Q1002	4822 130 41198	2SC945P
Q1003	4822 130 41198	2SC945P
Q1004	4822 130 41198	2SC945P
Q3001	4822 130 43818	2SC2878-A
Q3002	4822 130 41198	2SC945P
Q9001	4822 130 41198	2SC945P
Q9002	4822 130 10358	2SB772P/Q
Q9003	4822 130 41198	2SC945P
Q9004	4822 130 10358	2SB772P/Q
Q9031	4822 130 41198	2SC945P
Q9032	4822 130 63876	2SA733R
Q9033	4822 130 41198	2SC945P
Q9034	4822 130 63876	2SA733R

Note: Only these parts mentioned in the list are normal service parts.

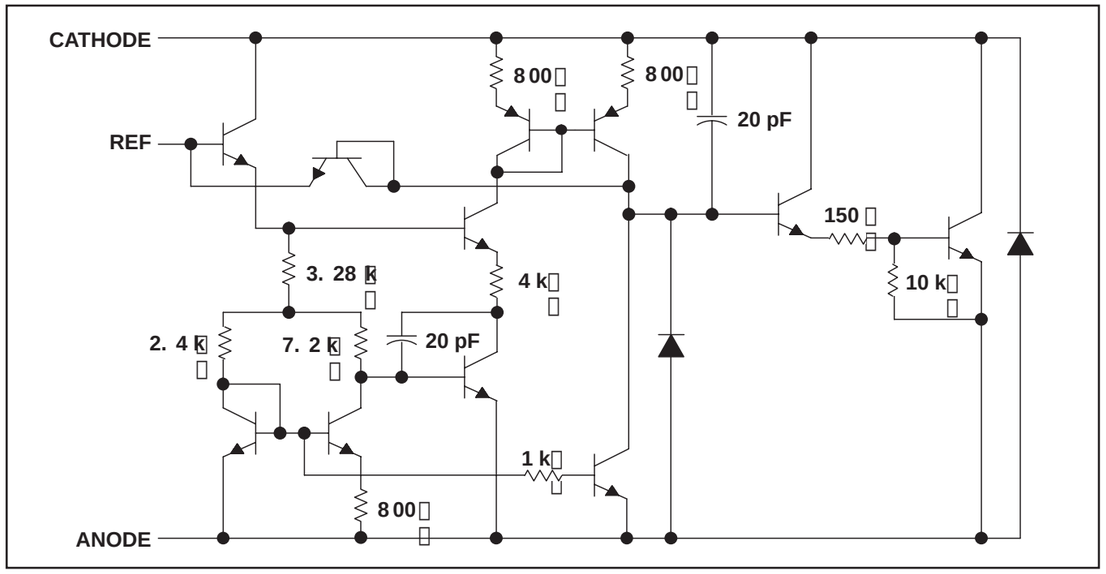
POWER BOARD

TABLE OF CONTENTS

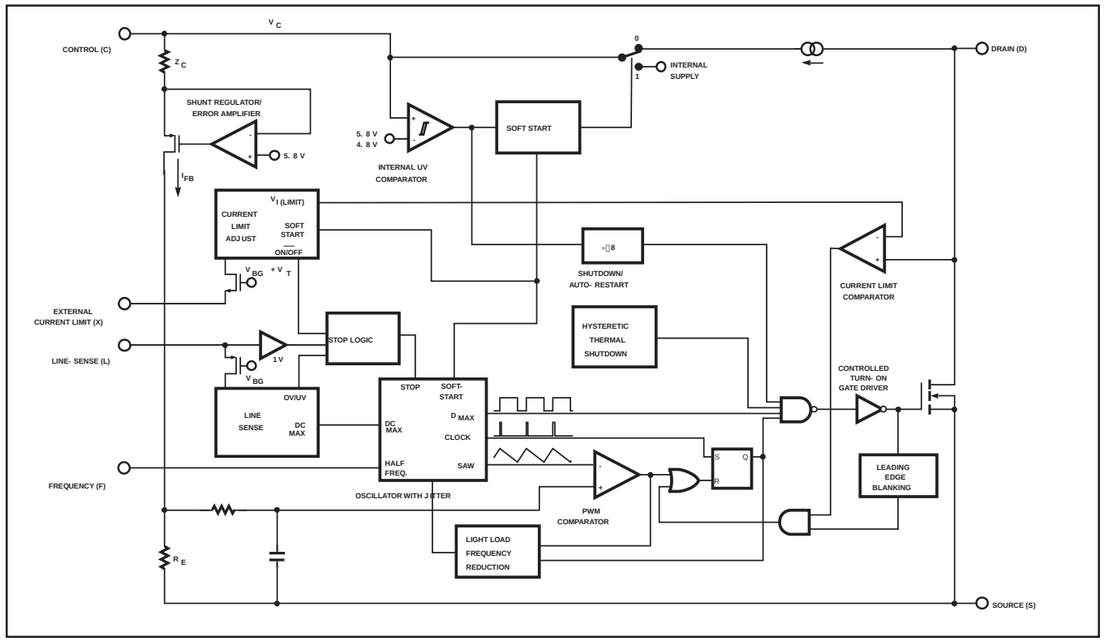
Internal IC Diagram & Voltage.....9-1
Circuit Diagram..... 9-2
PCB Layout 9-3
Electrical Parts List.....9-4

9-1

TL431 EQUIVALENT SCHEMATIC



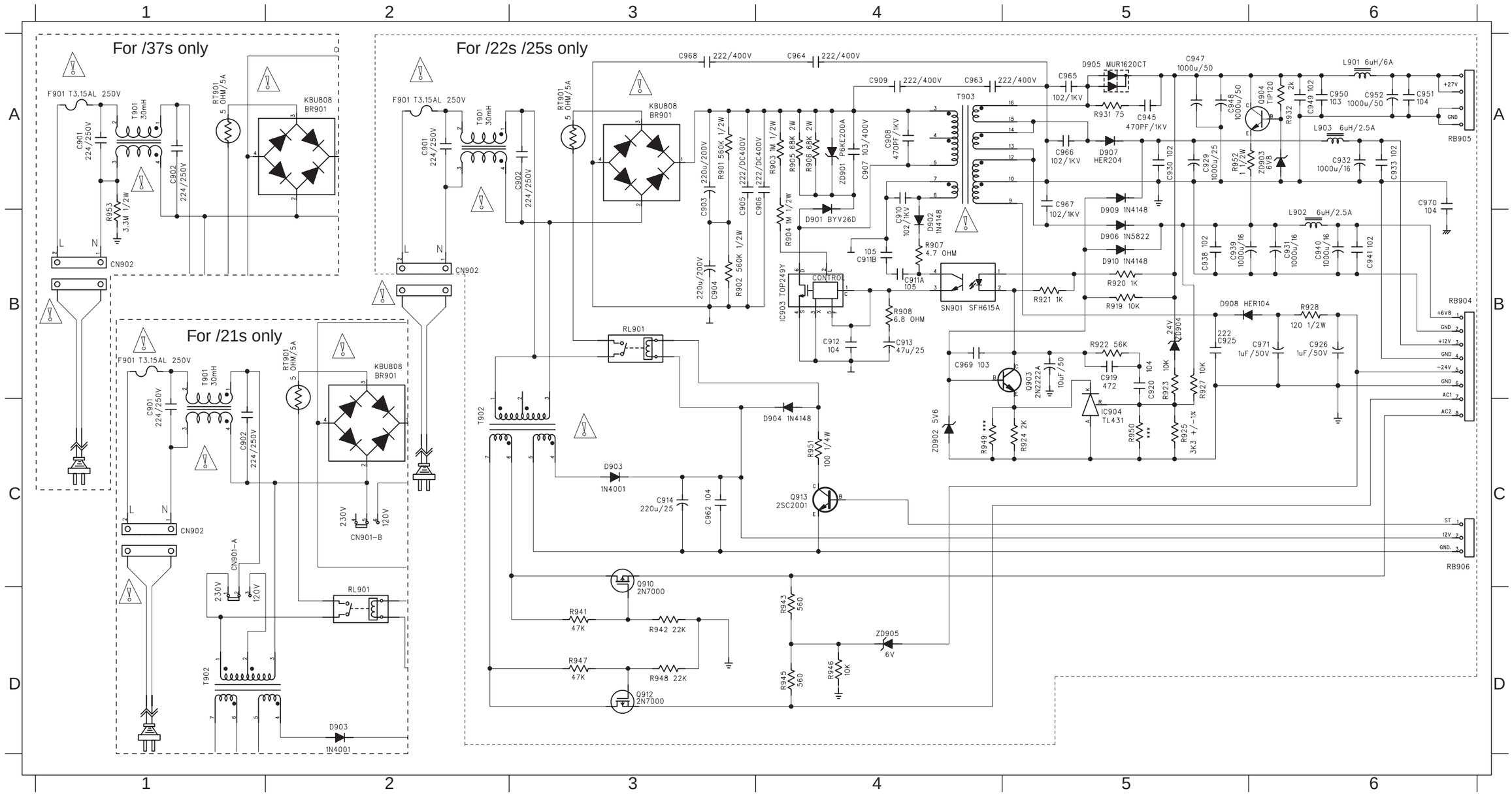
TOP249 BLOCK DIAGRAM



9-2

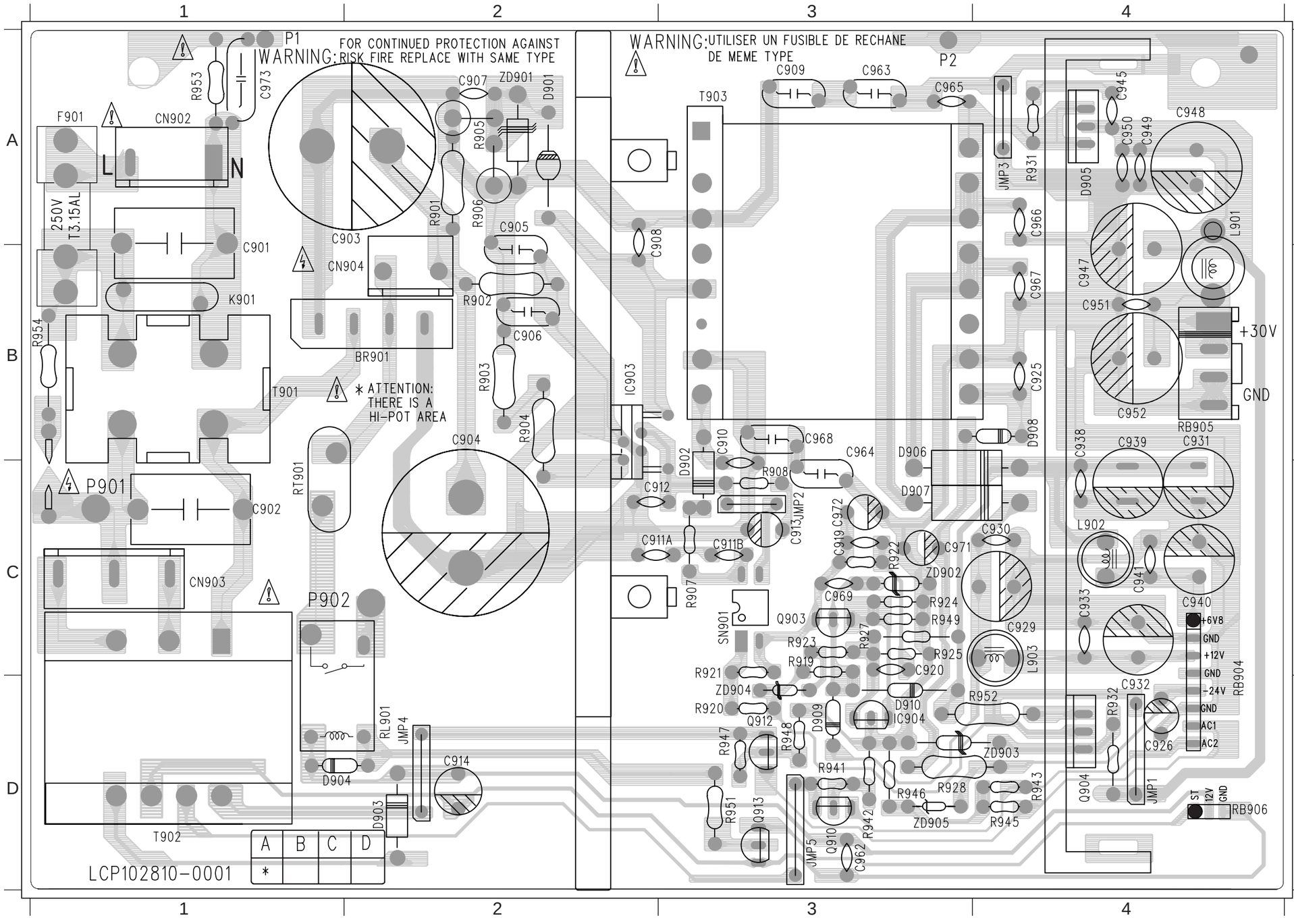
CIRCUIT DIAGRAM

BR901	A3	C908	A4	C919	B5	C933	A6	C949	A6	C966	A5	CN902	B2	D908	B5	L903	A6	R903	A4	R921	B5	R932	A6	R949	C4	RL901	B3	ZD903	A6
C901	A2	C909	A4	C920	B5	C938	B5	C950	A6	C967	A5	D901	B4	D909	A5	Q903	B5	R904	B4	R922	B5	R941	D3	R950	C5	RT901	A3	ZD904	B5
C902	A3	C910	B4	C925	B5	C939	B5	C951	A6	C968	A3	D902	B4	D910	B5	Q904	A6	R905	A4	R923	B5	R942	D3	R951	C4	SN901	B4	ZD905	D4
C903	A3	C911A	B4	C926	B6	C940	B6	C952	A6	C969	B4	D903	C3	F901	A2	Q910	C3	R906	A4	R924	C5	R943	D4	R952	A5	T901	A2		
C904	B3	C911B	B4	C929	A5	C941	B6	C962	C3	C970	A6	D904	C4	IC903	B4	Q912	D3	R907	B4	R925	C5	R945	D4	R953	B1	T902	C2		
C905	A3	C912	B4	C930	A5	C945	A5	C963	A4	C971	B6	D905	A5	IC904	C5	Q913	C4	R908	B4	R927	B5	R946	D4	RB904	B6	T903	A4		
C906	A4	C913	B4	C931	B6	C947	A5	C964	A4	CN901-A	C1	D906	B5	L901	A6	R901	A3	R919	B5	R928	B6	R947	D3	RB905	A6	ZD901	A4		
C907	A4	C914	C3	C932	A6	C948	A5	C965	A5	CN901-B	C2	D907	A5	L902	B6	R902	B3	R920	B5	R931	A5	R948	D3	RB906	C6	ZD902	C4		



9-3

POWER PCB LAYOUT



BR901	B2	JMP1	D4
C901	B1	JMP2	B3
C902	C1	JMP3	A4
C903	A2	JMP4	D2
C904	B2	JMP5	D3
C905	A2	JMP6	A4
C906	B2	K901	B1
C907	A2	L901	A4
C908	B2	L902	C4
C909	A3	L903	C4
C910	B3	P2	A3
C911A	C2	P901	C1
C911B	C3	P902	C1
C912	C2	Q903	C3
C913	C3	Q904	D4
C914	D2	Q910	D3
C919	C3	Q912	D3
C920	C3	Q913	D3
C925	B4	R901	A2
C926	D4	R902	B2
C929	C4	R903	B2
C930	C4	R904	B2
C931	B4	R905	A2
C932	C4	R906	A2
C933	C4	R907	C3
C938	B4	R908	C3
C939	B4	R919	C3
C940	C4	R920	D3
C941	C4	R921	C3
C945	A4	R922	C3
C947	B4	R923	C3
C948	A4	R924	C3
C949	A4	R925	C3
C950	A4	R927	C3
C951	B4	R928	D3
C952	B4	R931	A4
C962	D3	R932	C4
C963	A3	R941	D3
C964	B3	R942	D3
C965	A3	R943	D4
C966	A4	R945	D4
C967	B4	R946	D3
C968	B3	R947	D3
C969	C3	R948	D3
C971	C3	R949	C3
C972	C3	R951	D3
C973	A1	R952	C4
CN902	A1	R953	A1
CN903	C1	R954	B1
CN904	B2	RB904	C4
D901	A2	RB905	B4
D902	B3	RB906	D4
D903	D2	RL901	D2
D904	D1	RT901	C1
D905	A4	SN901	C3
D906	B3	T901	B1
D907	C3	T902	D1
D908	B4	T903	A3
D909	D3	ZD901	A2
D910	C3	ZD902	C3
F901	A1	ZD903	D4
IC903	B2	ZD904	D3
IC904	D3	ZD905	D3

9-4

ELECTRICAL PARTSLIST - POWER BOARD

- MISCELLANEOUS -

CN902	9965 000 15936	CONNECTOR 4P P=3.96MM
CN903	9965 000 17458	CONNECTOR 3P /21S/21R
CN904	9965 000 16340	CONNECTOR 5P /21S/21R
F901	⚠9965 000 17388	FUSE 3.15A 250V SLOW
F901	⚠9965 000 12637	FUSE 3.15A 250V UL /37
RB904	9965 000 18040	8P 100mm /22S/25S
RB904	9965 000 19195	8P 140mm /21S/21R/37
RB906	9965 000 18041	3P 100MM
RL901	⚠9965 000 16331	RELAY /22S/25S
RL901	⚠9965 000 15937	RELAY /21S/21R/37
SN901	9965 000 15769	PHOTO COUPLER
T901	⚠9965 000 17395	1.7A L1:86TS L2:86TS
T902	⚠9965 000 17391	PWR TRANS EI-35 /21S/21R
T902	⚠9965 000 18050	PWR TRANS 230V /22S/25S
T902	⚠9965 000 19196	PWR TRANS 120V /37
T903	⚠9965 000 18343	PWR TRANS /21S/21R/37
T903	⚠9965 000 17392	PWR TRANS /22S/25S

- CAPACITORS -

C907	9965 000 18042	COND DISC 0.01μF 1KV 20%
C905	9965 000 18043	0.0022μF 400V 20%
C906	9965 000 18043	0.0022μF 400V 20%
C909	9965 000 18043	0.0022μF 400V 20%
C963	9965 000 18043	0.0022μF 400V 20%
C964	9965 000 18043	0.0022μF 400V 20%
C968	9965 000 18043	0.0022μF 400V 20%

- RESISTORS -

R905	9965 000 17393	68KΩ 2W 5% W/KINK
R906	9965 000 17393	68KΩ 2W 5% W/KINK
R928	⚠9965 000 16691	120Ω 1/2W
R952	⚠9965 000 12517	1Ω 1/2W 5%

- COILS & FILTERS -

RT901	9965 000 17394	5Ω 5A
L901	9965 000 16693	6μH 10.5TS 6A
L902	9965 000 16694	6μH 13.5TS 2UEW
L903	9965 000 16694	6μH 13.5TS 2UEW

- DIODES -

BR901	9965 000 14146	ZENER 6.4-6.7V 0.5W
D901	4822 130 11044	BYV26D
D902	4822 130 30621	1N4148
D903	4822 130 31438	1N4001G
D904	4822 130 30621	1N4148

- DIODES -

D905	9965 000 14186	MUR1620CT 8A 200V
D906	5322 130 32677	1N5822
D907	9965 000 14187	HER204 2A/300V 50NS
D908	9965 000 14188	HER104 1A/300V 50NS
D909	4822 130 30621	1N4148
D910	4822 130 30621	1N4148
ZD901	9965 000 14209	P6KE200A
ZD902	9965 000 15944	DIODE ZENR 5.6-5.9V 0.5W
ZD903	4822 130 80272	MTZJ7.5C

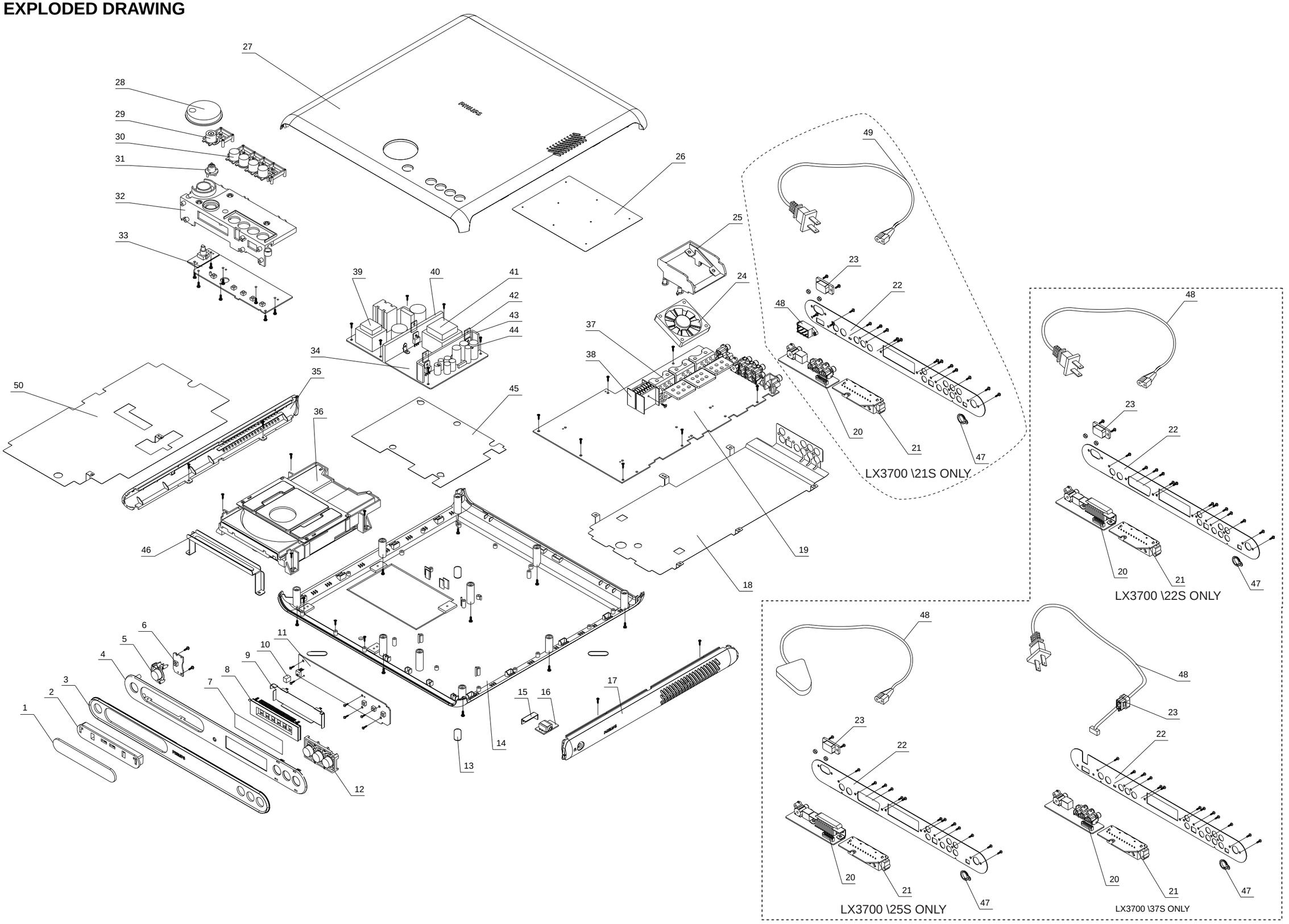
- IC & TRANSISTORS -

IC903	9965 000 14189	TOP249Y 250W
IC904	9965 000 17387	IC TL431
Q903	9965 000 17396	PN2222A FAIRCHILD
Q904	9965 000 17397	XISTR NPN TIP120
Q910	9965 000 16497	2N7000TA 60V/0.2A,
Q912	9965 000 16497	2N7000TA 60V/0.2A,
Q913	4822 130 41651	2SC2001L

Note: Only these parts mentioned in the list are normal service parts.

10-1

EXPLODED DRAWING



10-2

MECHANICAL & ACCESSORIES PARTSLIST

01	9965 000 17998	DOOR LENS
	9965 000 18363	DOOR LENS / LX3750W/22S/25S/37
02	9965 000 17990	DVD DOOR
	9965 000 18359	DVD DOOR / LX3750W/22S/25S/37
03	9965 000 17999	FRONT LENS
	9965 000 18364	FRONT LENS / LX3750W/22S/25S/37
04	9965 000 17991	FRONT PANEL
05	9965 000 17994	OPEN/CLOSE KNOB
12	9965 000 17996	FRONT KNOB
13	9965 000 18014	RUBBER FOOT
14	9965 000 17988	BOTTOM CAB
	9965 000 18357	BOTTOM CAB / LX3750W/37
	9965 000 19346	BOTTOM CAB / LX3750W/22S/25S
17	9965 000 18003	SIDE PANEL(R)
	9965 000 18366	SIDE PANEL(R) / LX3750W/37
	9965 000 19313	SIDE PANEL(R) / LX3750W/22S/25S
22	9965 000 18013	BACK PANEL /22S/25S
	9965 000 18372	BACK PANEL / LX3750W/37
	9965 000 18373	BACK PANEL / LX3700D/21R
	9965 000 18374	BACK PANEL / LX3700D/21S
23	9965 000 12443	AC SLOT /21S/21R/22S/25S
24	9965 000 18000	FAN GM1206PFV3-A
25	9965 000 18001	FAN PROTECTIVE WALL
27	9965 000 17989	TOP CABINET / LX3700D/22S/25S
	9965 000 19311	TOP CABINET / LX3700D/21S/21R
	9965 000 18358	TOP CABINET / LX3750W/37
	9965 000 19345	TOP CABINET / LX3750W/22S/25S
28	9965 000 17992	VOLUME KNOB
	9965 000 18360	VOLUME KNOB / LX3750W/22S/25S/37
29	9965 000 17993	POWER KNOB
	9965 000 18361	POWER KNOB / LX3750W/22S/25S/37
30	9965 000 17995	FUNCTION KNOB
	9965 000 18362	FUNCTION KNOB / LX3750W/22S/25S/37
31	9965 000 17997	LED LENS
32	9965 000 18004	TOP KNOB SUPPORT
35	9965 000 18002	SIDE PANEL(L)
	9965 000 18365	SIDE PANEL(L) / LX3750W/37
	9965 000 19314	SIDE PANEL(L) / LX3750W/22S/25S
36	⚠ 9965 000 18008	DVD LOADER DSL-710A
47	9965 000 12441	FM HOLDER
48	⚠ 9965 000 15983	MAINS CORD /22S
	⚠ 9965 000 12818	MAINS CORD / LX3750W/37
	⚠ 9965 000 18375	MAINS CORD /21S
	⚠ 9965 000 18329	MAINS CORD /21R
	⚠ 9965 000 17457	MAINS CORD /25S
	9965 000 14228	TUNER KST-F404VA2FM (/22S)
	4822 303 50063	FM ANTENNA
	4822 303 50082	AM FRAME AERIAL
	9965 000 13058	RCA CABLE 1200MM
	9965 000 14636	RCA CABLE 1200MM
	2422 076 00528	SCART CABLE /22S/25S
	9965 000 18005	SATELLITE SPK
	9965 000 18368	SATELLITE SPK/LX3750W/22S/25S
	9965 000 18367	SATELLITE SPK /LX3750W/37
	9965 000 18006	SUBWOOFER /LX3700D/22S/25S
	9965 000 18370	SUBWOOFER /21S/21R
	9965 000 18371	SUBWOOFER / LX3750W/22S/25S
	9965 000 18369	SUBWOOFER / LX3750W/37
	9965 000 18007	REMOTE CONTROL / LX3700D/21S/21R/22S/25S
	9965 000 18376	REMOTE CONTROL / LX3750W/22S/25S/37
	9965 000 18012	OWNER MANUAL /22S/25S
	9965 000 18378	OWNER MANUAL / LX3750W/37
	9965 000 18377	OWNER MANUAL / LX3700D/21S/21R

Note: Only these parts mentioned in the list are normal service parts.

WIRELESS SURROUND LOUDSPEAKER BOXES

TABLE OF CONTENTS

Introduction 11-1
Mechanical instructions - Mech. Partslist 11-1
Service hints 11-2
Blockdiagrams 11-4
Wiring 11-6
Electrical Diagrams 11-7
Circuit Descriptions 11-21
Spare Partslist 11-26

11. Wireless Surround Loudspeaker boxes

1.1. Introduction

With the Wireless surround system it is possible to connect rear speakers wireless with the main set. The system consists of:transmitter part Tx: interface-board and transmitter board receiver part RX: receiver board, amplifier board and SMPSupply part
Loudspeaker boxes left and right rear, per equipment defined.
The interface board can be an integrated part of a TV set (EM6E-chassis) or a separate board in the transmitter part in case of the AV Entertainment (DVD-receiver) application.
Transmitter and receiver can be seen as one system,
The amplifier board is per application (TV or AV) adapted.

Figure 1-1 Wireless transm. receiver cabinets

1.2. Mechanical Intructions

1.2.1. EV drawings + mechanical partslists

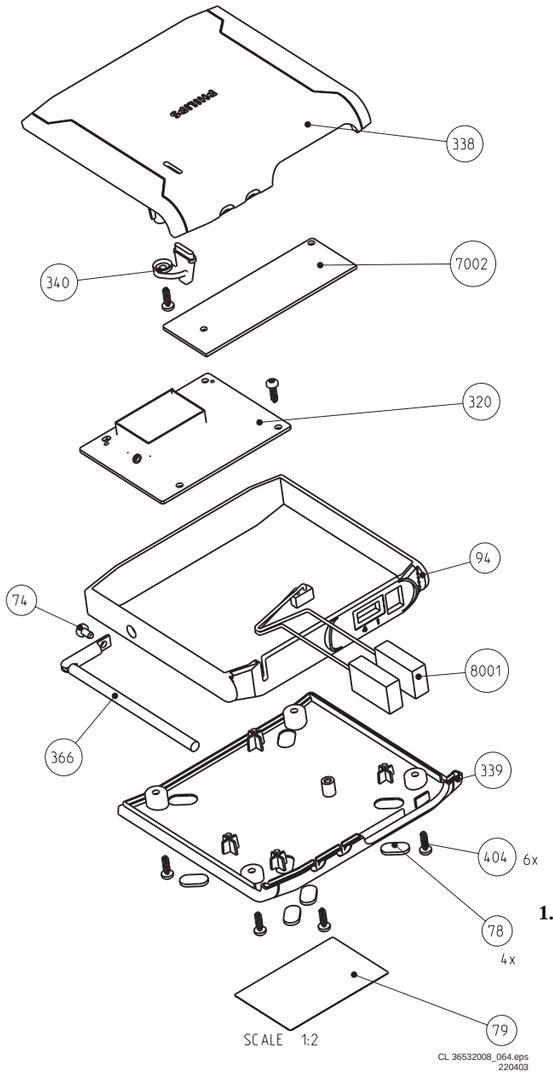


Figure 1-2 Transmitter

Partslist Transmitter

0074		Screw M3 x 6
0078	4304 074 19580	FEET
0320		TRANSMITTER BOARD
0338	4304 074 19520	TOP COVER TRANSMITTER
0339	4304 074 19530	BOTTOM COVER forTRANSMITTER
0340	4304 074 19560	LIGHT GUIDE TRANSMITTER
0366	3104 210 21710	ANTENNA
7002		INTERFACE BOARD TRANSMITTER
8001	4304 078 90060	CABLE ASSY LS INPUT INTERFACE

11-1

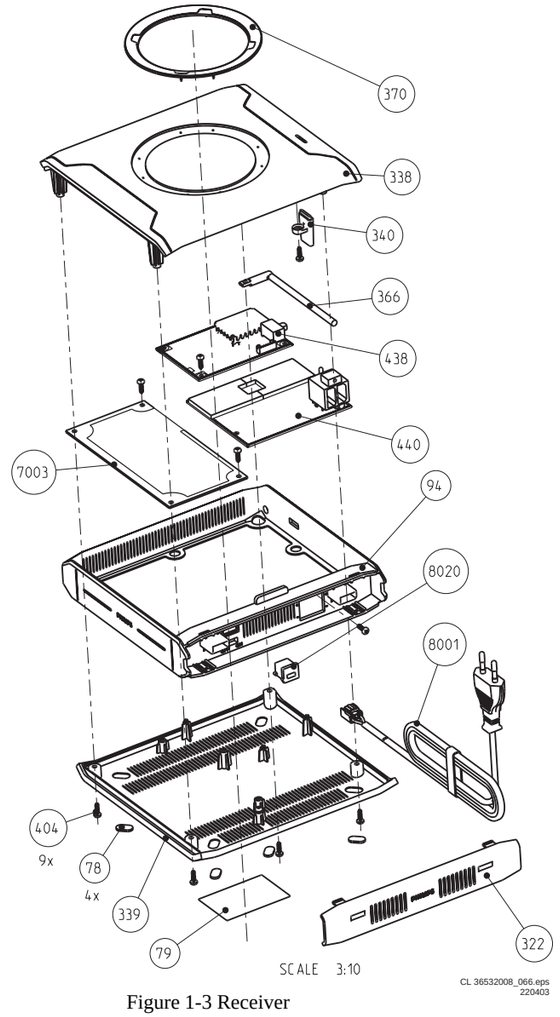


Figure 1-3 Receiver

Partslist Receiver

0078	4304 074 19580	FEET
0338	4304 074 19480	TOP COVER for RECEIVE
0339	4304 074 19470	BOTTOM COVER for RECEIVER
0340	4304 074 19570	LIGHT GUIDE RECEIVER
0366	3104 210 21710	ANTENNA
0370	4304 074 19510	DECORATIVE RING IN TOPCOVER
0438		RECEIVER BOARD
0440		AMPLIFIER
7003	4304 078 90130	SMPS board for amplifier
8001	4304 078 89080	CABLE ASSY POWER UK
8001	4304 078 90200	CABLE ASSY POWER USA

1.2.2. Demounting TX transmitter:

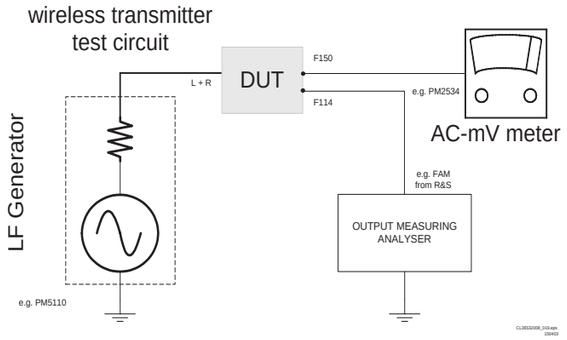
- Loosen 4 screws at bottom side.
- Now top cover can be removed
- The interface board can be removed after disconnecting cable 8003Tx.
- To remove the transmitter board loosen one screw, be careful for antenna which positioned through the mechanical “ring” and disconnect cable.
- To remount transmitter take care for LS cable 8001Tx to put it through the opening in the mechanical ring and through the wire inlays in the bottom part otherwise damaging of the wires may happen.

1.2.3. Demounting RX receiver:

- Loosen 4 screws at bottom side.
- Remove antenna
- Now the top cover can be removed
- The receiver board can be removed after loosening of one screw and connection cable 8004Rx.
- The amplifier board is fixed with 2 screws, one on board one on connector 1100. The screw which fits connector 1100 is behind the cable cover. After removing cables 8002Rx, 8003Rx and 8004Rx, the board can be taken out.
- The SMPowerSupply board is fixed with 2 screws, after loosening of these screws and disconnecting cables 8002Rx and 8003Rx the board can be removed.
- To remount receiver take care for correct positioning of the antenna, when fixing bottom cover.

1.3. Service hints, faultfinding and alignments

1.3.1 Measurement setup



Wireless Transmitter functional check and adjustment table Audio AD905W (LX3750W) versions

Powersupply check	Measurement ground	testpoint	Scope / Voltmeter
DC Check	F116	F119	+12V ± 0.5V
		F124	+ 8.35V ± 0.25V
		F126	+ 5V ± 0.25V
		F145	+ 2.52V ± 0.2V
		F144	+ 2.52V ± 0.2V
		F147	+ 4.2V ± 0.3V
		F149	+ 4.2V ± 0.3V

picture DUT:

LF input signal L = 400Hz; R = 400Hz, via	input level	testpoint	Input and Measurement ground	AC Voltmeter	Frequency counter
F117	410 mV L	F130	F116		23.4375 kHz ± 10 Hz
F118	410mV R				
F117	410 mV L	F131			46.875 kHz ± 20 Hz
F118	410mV R				
F117	410 mV L	F145		210 mV ± 20 mV	
F118	410mV R	F144		210 mV ± 20 mV	
F117	410 mV L	F147		200 mV ± 20 mV	
F118	410mV R				
F117	410 mV L	F149		205 mV ± 20 mV	
F118	410mV R				
F117	2100 mV L	F149		380 mV ± 40 mV	
F118	2100 mV R				

Check RF output signal

LF input signal L = 400Hz; R = 400Hz, via	input level	Input ground	channel	Measurement RF ground	Output signal	Frequency counter	Version
F117	0 mV L	F116	4	F115	F114	864.5 ± 0.025 MHz	for EUR and UK version
F118	0 mV R					915.3 ± 0.025 MHz	for USA version

Alignment of the modulation level *
Method 1

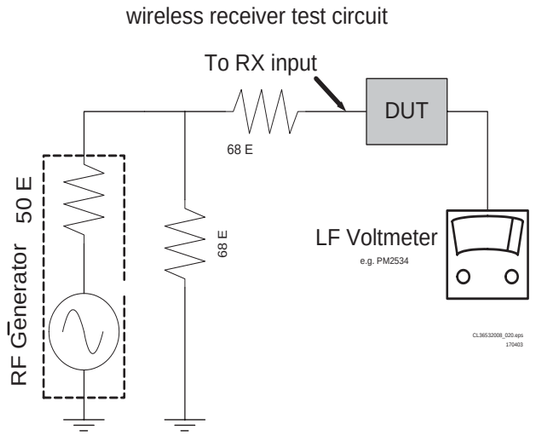
LF input signal L = 400Hz; R = 400Hz, via	input level	input ground	Connect RF Modulation Analyzer to testpoint	Measurement ground	Align	RF Modulation Analyser deviation
F117	410 mV L	F116	F114	F115	3179	50 kHz ± 3 Hz
F118	410 mV R					

Method 2

LF input signal L = 400Hz; R = 400Hz, via	input level	input ground	Connect AC mV meter to testpoint	Measurement ground	Align	AC mV meter
F117	410 mV L	F116	F150	F116	3179	80mV rms (= 230mV pp)
F118	410 mV R					

* or Method 1 or Method 2 to be applied

Figure 1-4 Table AV transmitter



WirelessReceiver functional check and adjustment table Audio AD905W (LX3750W) versions

Powersupply check	Measurement ground	testpoint	Scope / Voltmeter
DC Check	F701	F702	+10V ± 0.1V
		F740	+ 5.2V ± 0.5V
		F705	+ 8V ± 0.5V
		F707	+ 8V ± 0.5V
		F708	+3.6V ± 0.2V
		F709	+7.75V ± 0.5V
	F744	F740	+ 5.2V ± 0.2V
	F701	F712	+ 4.1V ± 0.3V
		F713	+ 4.1V ± 0.3V

Functional check
picture: receiver test circuit:

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	channel switch select	Output signal	Voltmeter	version
F748	863.3 MHz	1 mV rms	channel 1	F728	LF output	for EUR and UK version
F748	914.1 MHz	1 mV rms	channel 1	F728	LF output	for USA version

Alignment of the receiver EUR version

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	Testpoints grounded to F744	channel switch select	Alignment	Align	Output signal	Voltmeter	version
F748	863.3 MHz	1 mV rms	F724 & F725	channel 1	FM Detector coil	1710	F728	LF max output	for EUR and UK version
			Remove groundin gs F724 & F725						
F748	863.3 MHz	250 µV rms		channel 1	Sliding stereo signal	3743	F747	>3 V DC	for EUR and UK version
F748	863.3 MHz	250 µV rms		channel 1	Sliding stereo signal	reduce 3743 slowly	F747	between 0.2 and 3 V	for EUR and UK version
F748	863.3 MHz	10 µV rms		channel 1	Tuned/Muted level	3741	F724	>2.5 V DC	for EUR and UK version
F748	863.3 MHz	10 µV rms		channel 1	Tuned/Muted level	reduce 3741 slowly	F724	< 1 V	for EUR and UK version

Alignment of the receiver USA version

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	Testpoints grounded to F744	channel switch select	Alignment	Align	Output signal	Voltmeter	version
F748	914.1 MHz	1 mV rms	F724 & F725	channel 1	FM Detector coil	1710	F728	LF max output	for USA version
			Remove groundin gs F724 & F725						
F748	914.1 MHz	250 µV rms		channel 1	Sliding stereo signal	3743	F747	>3 V DC	for USA version
F748	914.1 MHz	250 µV rms		channel 1	Sliding stereo signal	reduce 3743 slowly	F747	between 0.2 and 3 V	for USA version
F748	914.1 MHz	10 µV rms		channel 1	Tuned/Muted level	3741	F724	>2.5 V DC	for USA version
F748	914.1 MHz	10 µV rms		channel 1	Tuned/Muted level	reduce 3741 slowly	F724	< 1 V	for USA version

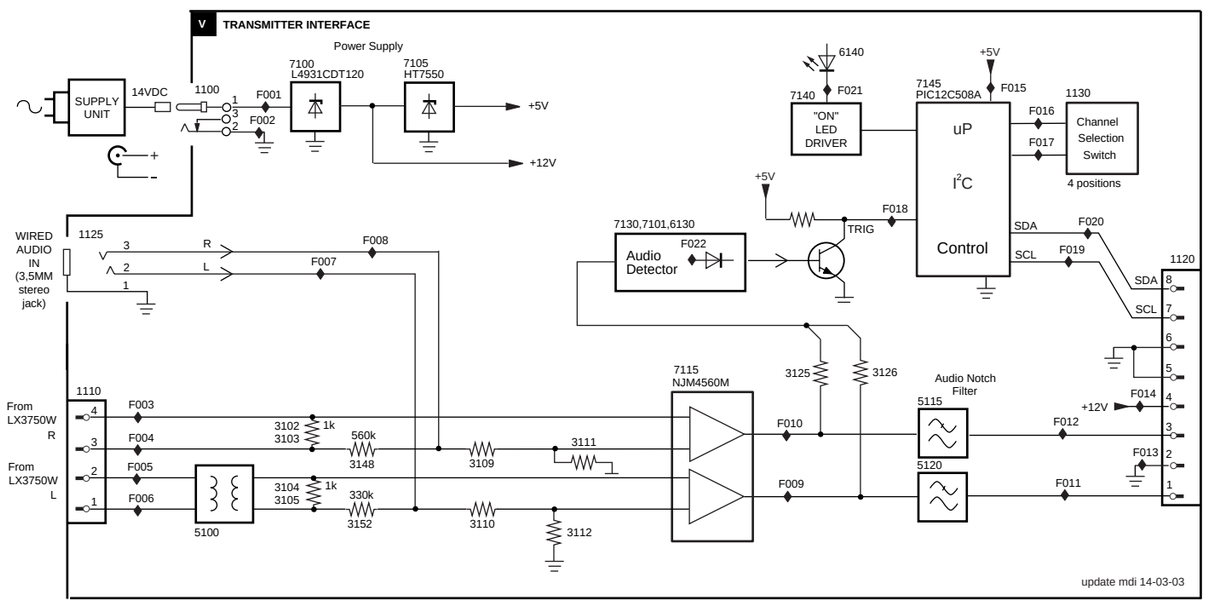
* e.g. SMT02 from Rohde & Schwarz

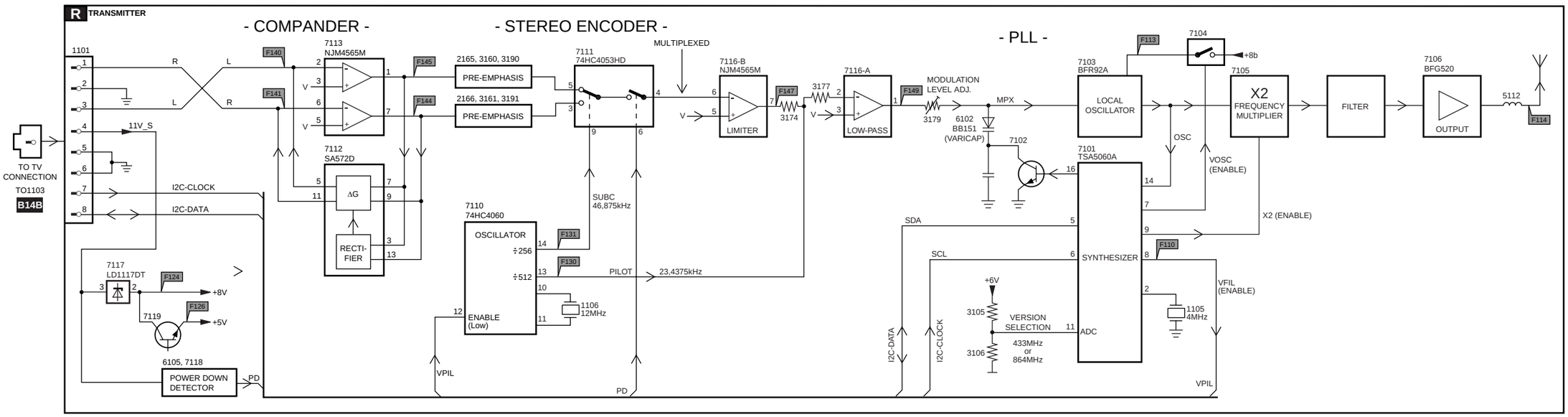
Figure 1-5 Table AV receiver

CL 36532008_088.eps
220403

11-3

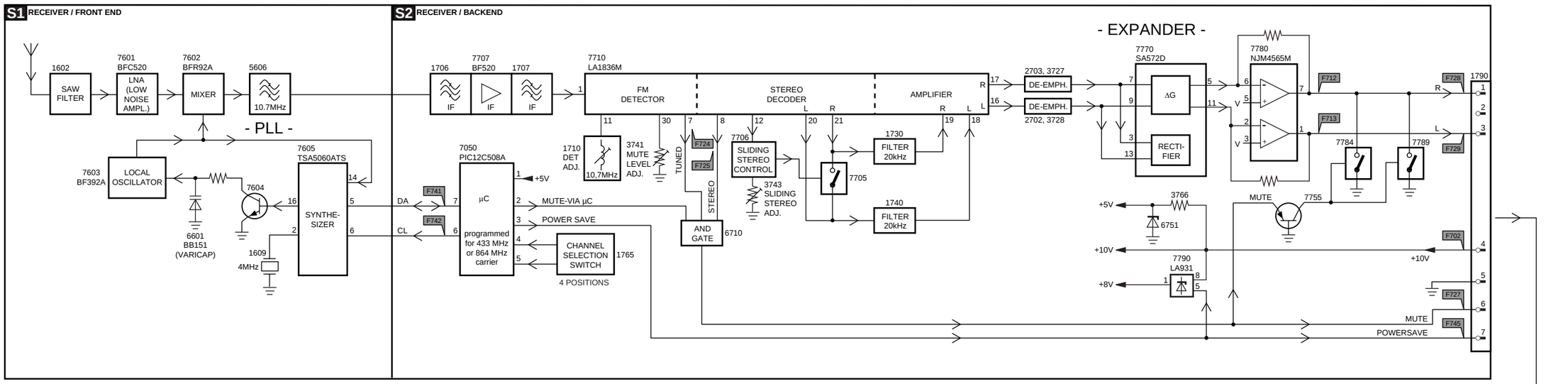
1.4 Block Diagram TX

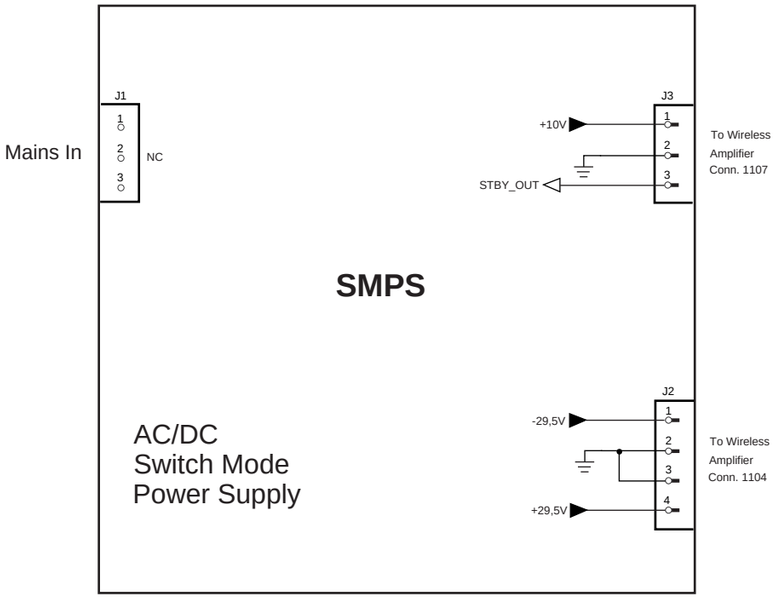


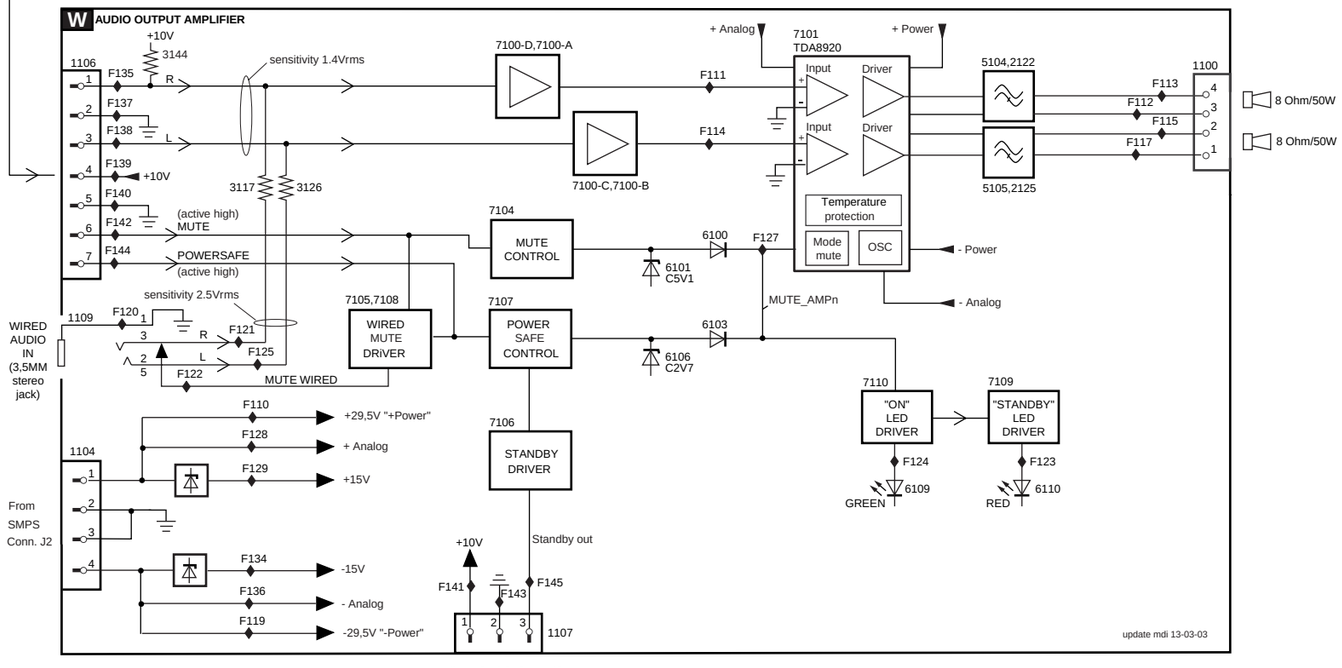


11-4

1.5 Block Diagram RX

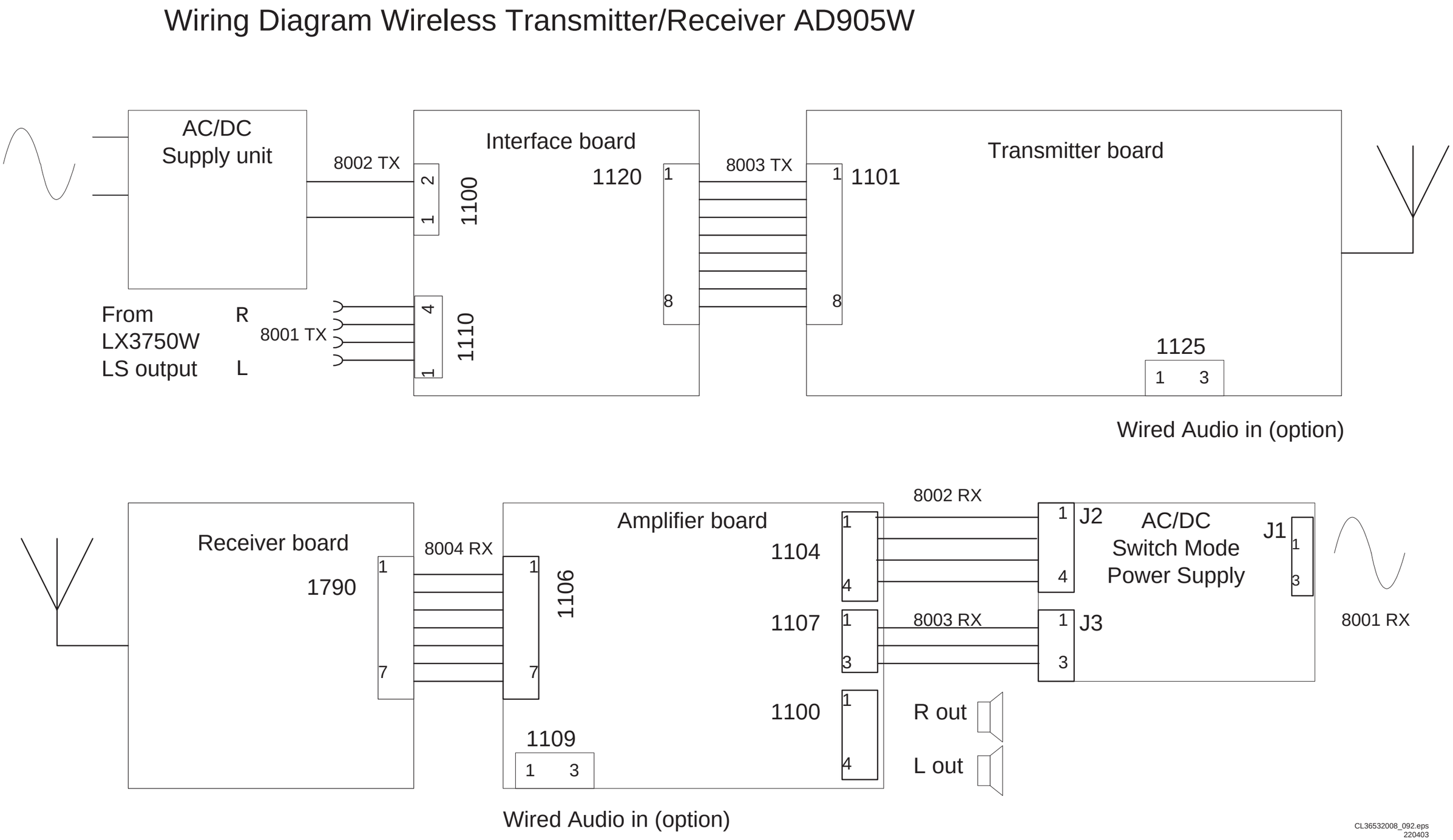






11-5

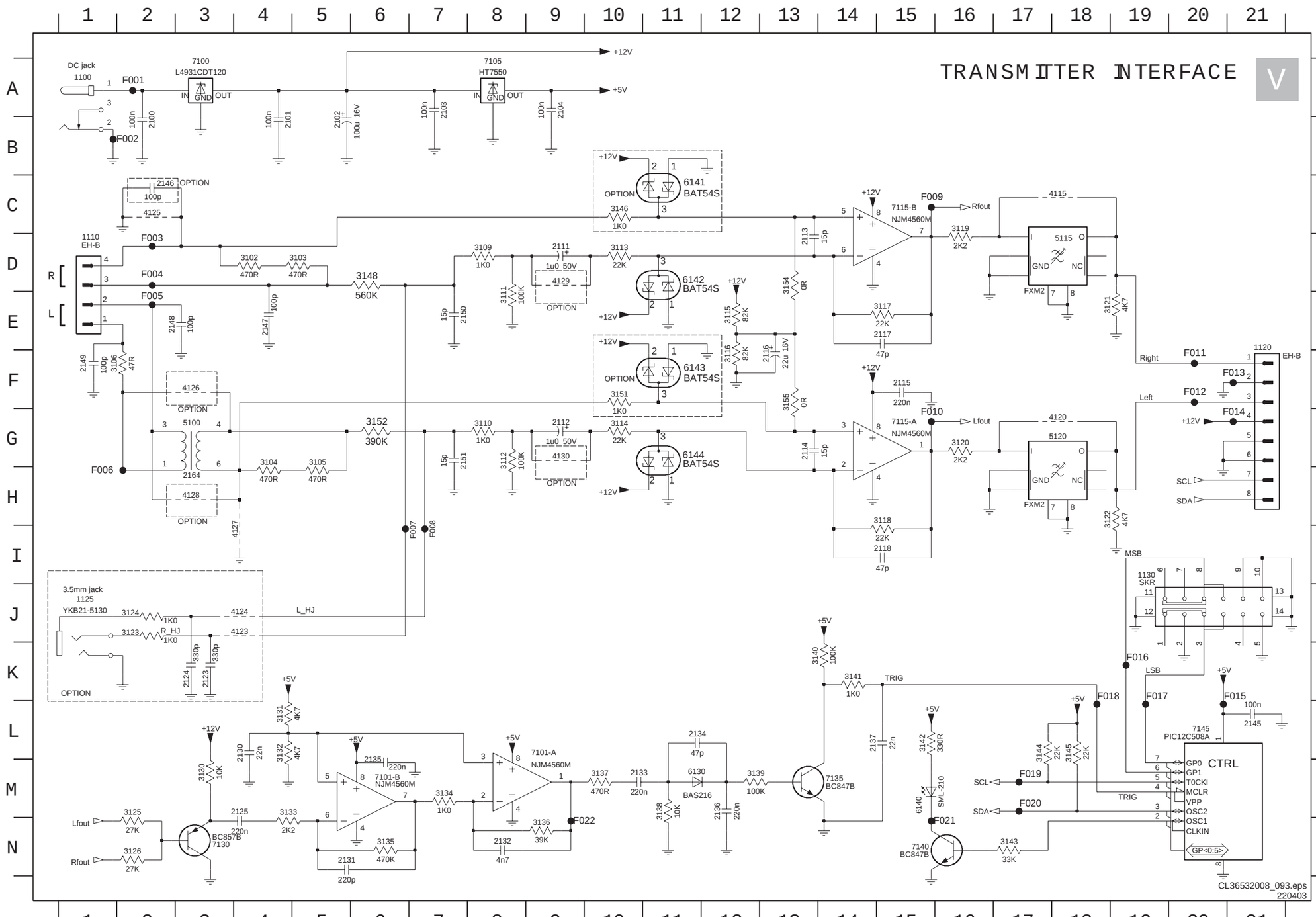
1.6 Wiring Diagram



11-6

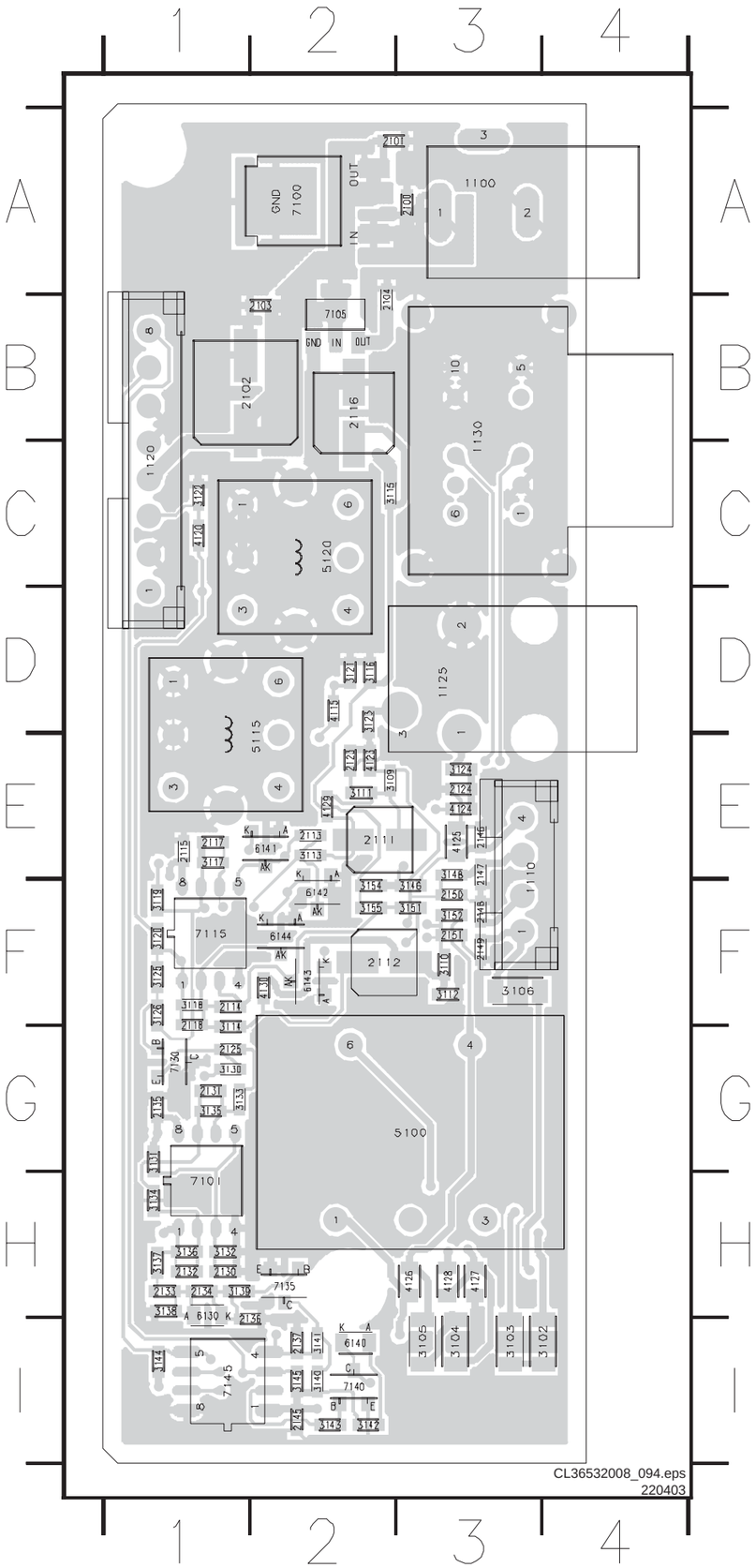
1.7 Electrical Diagrams

1.7.1 Wireless Interface Board



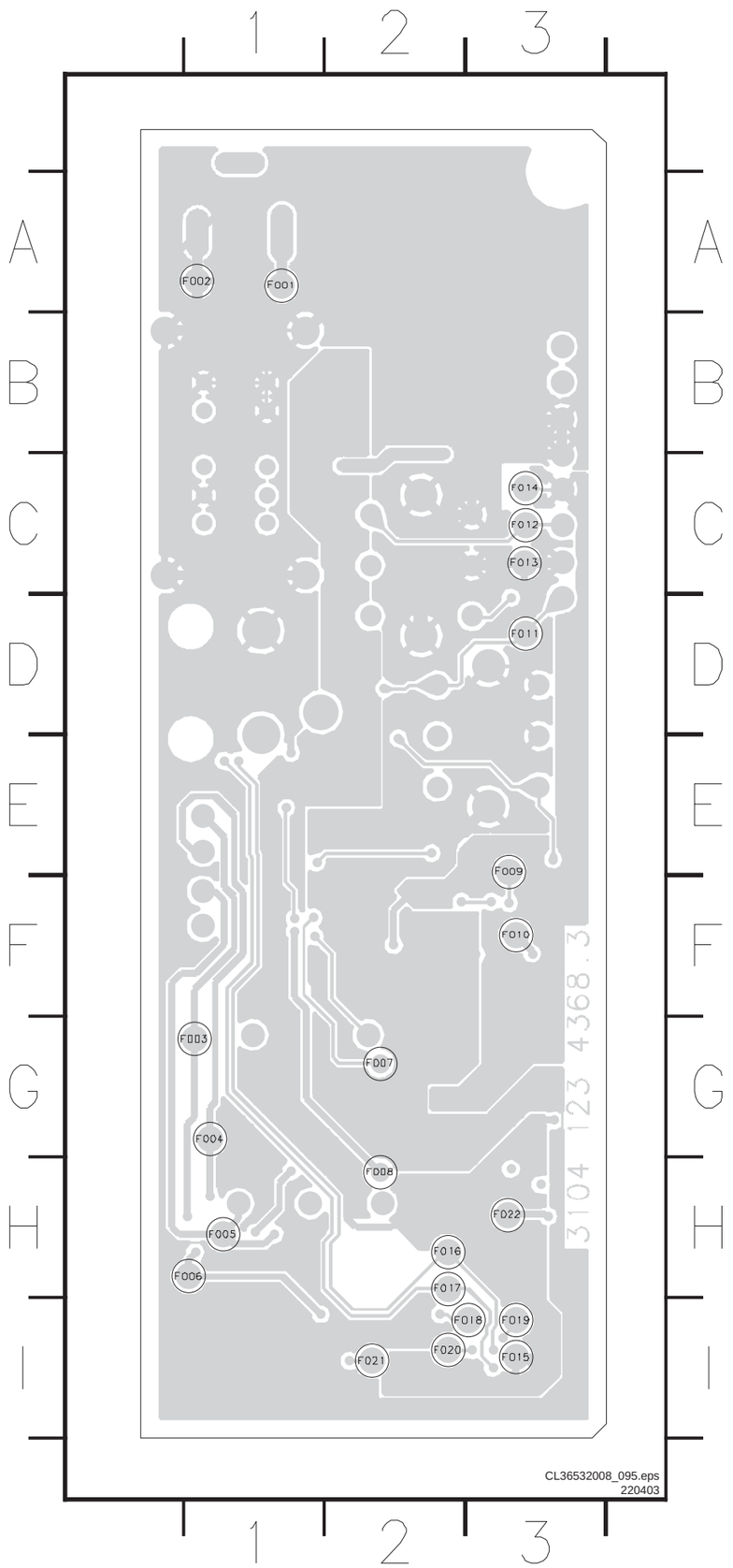
1100	A1	3148	D6
1110	D1	3151	F10
1120	E21	3152	G6
1125	J1	3154	D13
1130	I9	3155	F13
2100	B2	4115	C18
2101	B4	4120	G18
2102	B5	4123	J4
2103	A7	4124	J4
2104	A9	4125	C2
2111	D9	4126	F3
2112	G9	4127	I4
2113	D13	4128	H3
2114	G13	4129	D9
2115	F15	4130	G9
2116	F13	5100	G3
2117	E15	5115	D18
2118	I15	5120	G18
2123	K3	6130	M11
2124	K3	6140	M15
2125	M4	6141	C11
2130	L4	6142	D11
2131	N5	6143	F11
2132	N8	6144	G11
2133	M10	7100	A3
2134	L11	7101-A	L9
2135	M6	7101-B	M6
2136	M12	7105	A8
2137	L14	7115-A	G15
2145	L21	7115-B	C15
2146	C2	7130	N3
2147	E4	7135	M14
2148	E2	7140	N15
2149	F1	7145	L20
2150	E7	F001	A2
2151	G7	F002	B2
3102	D4	F003	D2
3103	D5	F004	D2
3104	G4	F005	E2
3105	G5	F006	H1
3106	F1	F007	I7
3109	D8	F008	I7
3110	G8	F009	C15
3111	E8	F010	G15
3112	G8	F011	F20
3113	D10	F012	F20
3114	G10	F013	F21
3115	E12	F014	G21
3116	F12	F015	K21
3117	E15	F016	K19
3118	H15	F017	K19
3119	C16	F018	K18
3120	G16	F019	M17
3121	E18	F020	M17
3122	H18	F021	N16
3123	J2	F022	N9
3124	J2		
3125	M2		
3126	N2		
3130	M3		
3131	L4		
3132	L4		
3133	M4		
3134	M7		
3135	N6		
3136	N9		
3137	M10		
3138	M11		
3139	M12		
3140	K13		
3141	K14		
3142	L15		
3143	N17		
3144	L17		
3145	L18		
3146	C10		

Layout Wireless Interface Board (Top Side)



1100	A3	3124	E3				
1110	E3	3125	F1				
1120	C1	3126	F1				
1125	D3	3130	G1				
1130	B3	3131	G1				
2100	A3	3132	H1				
2101	A2	3133	G1				
2102	B1	3134	H1				
2103	B2	3135	G1				
2104	B2	3136	H1				
2111	E2	3137	H1				
2112	F2	3138	H1				
2113	E2	3139	H1				
2114	F1	3140	I2				
2115	E1	3141	I2				
2116	B2	3142	I2				
2117	E1	3143	I2				
2118	F1	3144	I1				
2123	E2	3145	I2				
2124	E3	3146	F3				
2125	G1	3148	E3				
2130	H1	3151	F3				
2131	G1	3152	F3				
2132	H1	3154	F2				
2133	H1	3155	F2				
2134	H1	4115	D2				
2135	G1	4120	C1				
2136	I2	4123	E2				
2137	I2	4124	E3				
2145	I2	4125	E3				
2146	E3	4126	H3				
2147	E3	4127	H3				
2148	F3	4128	H3				
2149	F3	4129	E2				
2150	F3	4130	F2				
2151	F3	5100	G3				
3102	I4	5115	E2				
3103	I3	5120	C2				
3104	I3	6130	H1				
3105	I3	6140	I2				
3106	F3	6141	E2				
3109	E2	6142	F2				
3110	F3	6143	F2				
3111	E2	6144	F2				
3112	F3	7100	A2				
3113	E2	7101	H1				
3114	G1	7105	B2				
3115	C2	7115	F1				
3116	D2	7130	G1				
3117	E1	7135	H2				
3118	F1	7140	I2				
3119	F1	7145	I1				
3120	F1						
3121	D2						
3122	C1						
3123	D2						

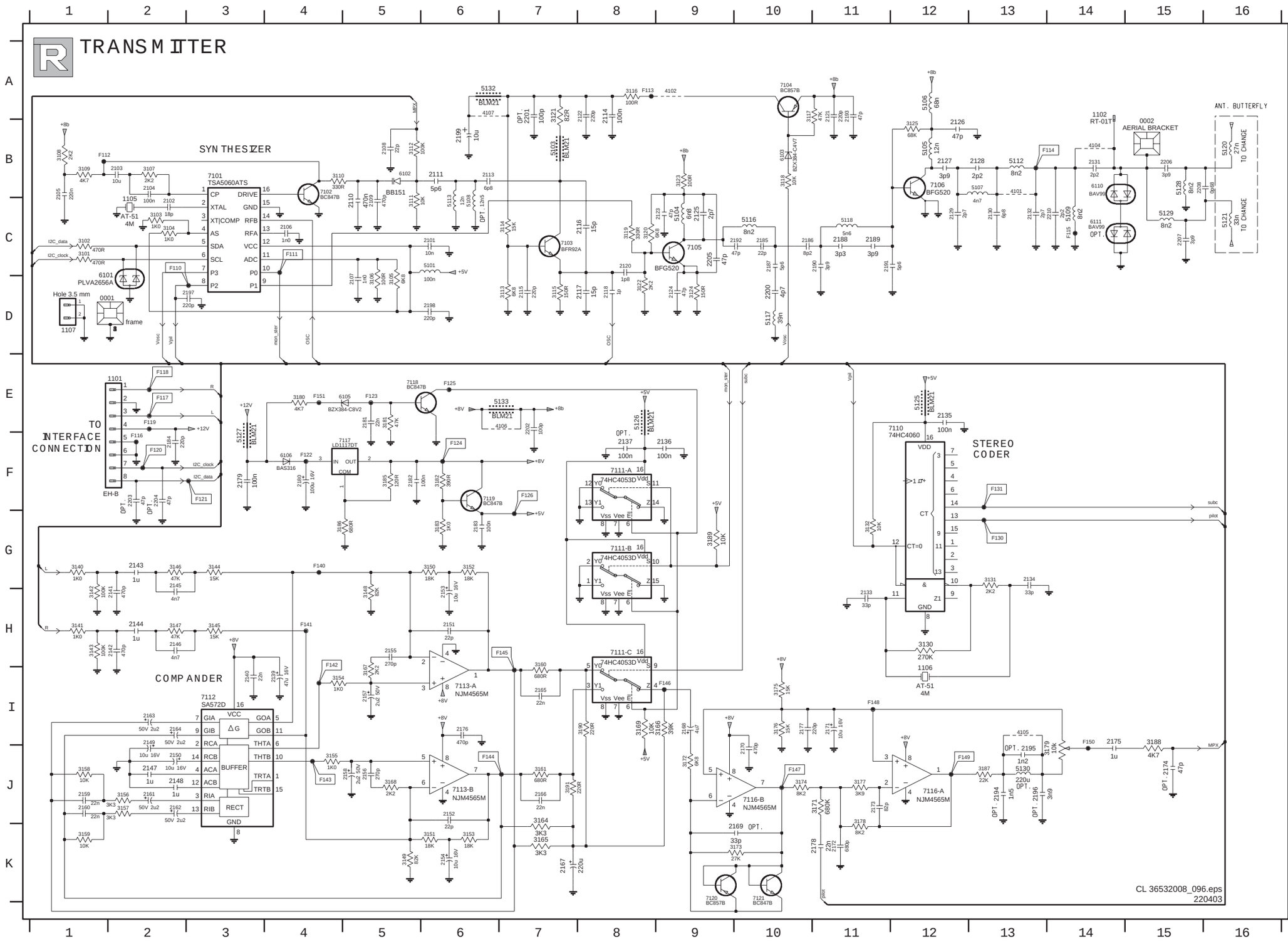
Layout Wireless Interface Board (Bottom Side)



F001	A1
F002	A1
F003	G1
F004	G1
F005	H1
F006	H1
F007	G2
F008	H2
F009	E3
F010	F3
F011	D3
F012	C3
F013	C3
F014	C3
F015	I3
F016	H2
F017	H2
F018	I3
F019	I3
F020	I2
F021	I2
F022	H3

11-8

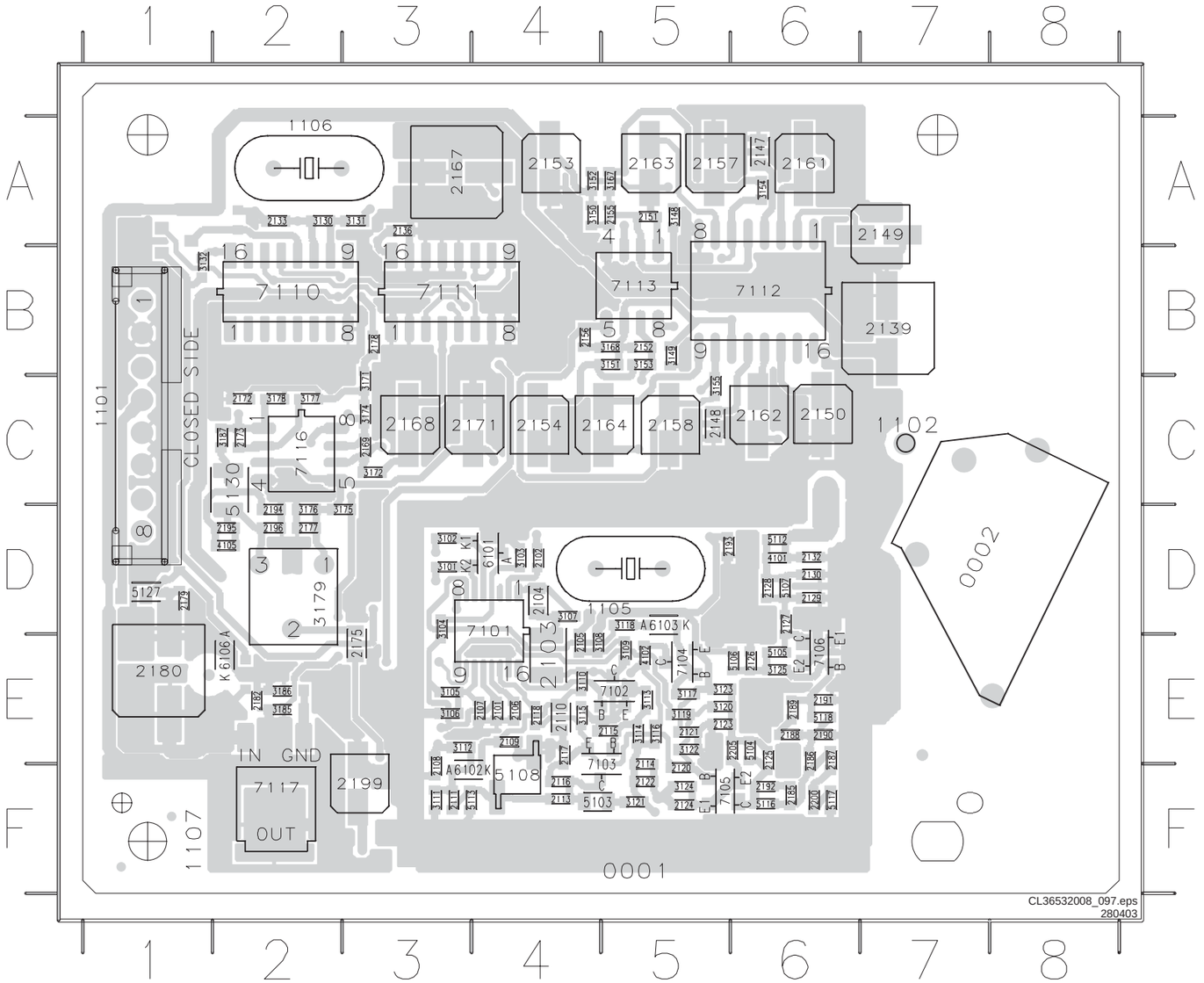
1.7.2 Wireless Transmitter Board



0001 D1	3115 D7	F119 E2	
0002 B15	3116 A8	F120 F2	
1101 E2	3117 A10	F121 F3	
1102 A14	3118 B10	F122 F4	
1105 C2	3119 C8	F123 E5	
1106 D12	3120 C8	F124 F6	
1107 D1	3121 A7	F125 E6	
2101 C6	3122 D8	F126 F7	
2102 C2	3123 B9	F130 G13	
2103 B2	3124 D9	F131 F13	
2104 B2	3125 B12	F140 G4	
2105 B1	3130 H12	F141 H4	
2106 C4	3131 G13	F142 H4	
2107 D5	3132 G11	F143 J4	
2108 B5	3140 G1	F144 J6	
2109 C5	3141 H1	F145 H7	
2110 C5	3142 H1	F146 H9	
2111 B6	3143 H1	F147 J10	
2113 B6	3144 G3	F148 I11	
2114 A8	3145 H3	F149 J12	
2115 D7	3146 G2	F150 I14	
2116 C8	3147 H2	F151 E4	
2117 D8	3148 H5		
2118 D8	3149 K5		
2120 C8	3150 G6		
2121 A11	3151 K6		
2122 A8	3152 G6		
2123 C9	3153 K6		
2124 D9	3154 I1		
2125 C9	3155 J4		
2126 B12	3156 J2		
2127 B12	3157 J2		
2128 B13	3158 J1		
2129 C12	3159 K1		
2130 C13	3160 H7		
2131 B14	3161 J7		
2132 C13	3164 J7		
2133 H11	3165 K7		
2134 G13	3166 I3		
2135 E12	3167 I5		
2136 F9	3168 J5		
2137 F8	3169 I8		
2139 I4	3171 J11		
2140 I3	3172 J9		
2141 H2	3173 K10		
2142 H2	3174 J10		
2143 G2	3175 I10		
2144 H2	3176 I10		
2145 G2	3177 J11		
2146 H2	3178 J11		
2147 J2	3179 J13		
2148 J2	3180 E4		
2149 I2	3181 E5		
2150 J2	3182 F6		
2151 H6	3183 G6		
2152 J6	3185 F5		
2153 H6	3186 G4		
2154 K6	3187 J13		
2155 H5	3188 I15		
2156 J5	3189 G9		
2157 I5	3190 I8		
2158 J5	3191 J7		
2159 J1	4101 B13		
2160 J1	4102 A9		
2161 J2	4104 B14		
2162 J2	4105 I13		
2163 I2	4106 E7		
2164 I2	4107 A6		
2165 I7	5101 C6		
2166 J7	5103 B7		
2167 K7	5104 C9		
2168 I9	5105 B12		
2169 K10	5106 A12		
2170 J10	5107 B13		
2171 I11	5108 C6		
2172 K11	5109 C14		
2173 J11	5112 B13		
2174 J15	5113 C6		
2175 I14	5116 C10		
2176 I6	5117 D10		
2177 I10	5118 C11		
2178 K11	5120 B16		
2179 F3	5121 C16		
2180 F4	5125 E12		
2181 E5	5126 E8		
2182 F5	5127 F3		
2183 G6	5128 B15		
2184 F2	5129 C15		
2185 C10	5130 J13		
2186 C10	5132 A6		
2187 C10	5133 E7		
2188 C11	6101 D2		
2189 C11	6102 B5		
2190 C11	6103 B10		
2191 C11	6105 E5		
2192 C10	6106 F4		
2193 A11	6110 B14		
2194 J13	6111 C14		
2195 J13	7101 B3		
2196 J13	7102 B4		
2197 D3	7103 C7		
2198 D6	7104 A10		
2199 B6	7105 C9		
2200 D10	7106 B12		
2201 A7	7110 E11		
2202 E7	7111-A F8		
2203 F2	7111-B G8		
2204 F2	7111-C H8		
2205 C9	7112 I3		
2206 B15	7113-A I6		
2207 C15	7113-B J6		
2208 B15	7116-A J12		
2210 C14	7116-B J10		
3101 C1	7117 F5		
3102 C1	7118 E5		
3103 C2	7119 F6		
3104 C2	7120 K9		
3105 D5	7121 K10		
3106 D5	7110 C2		
3107 B2	F111 C4		
3108 B1	F112 B1		
3109 B1	F113 A8		
3110 B4	F114 B14		
3111 C5	F115 C14		
3112 B5	F116 F2		
3113 D7	F117 E2		
3114 C7	F118 E2		

11-9

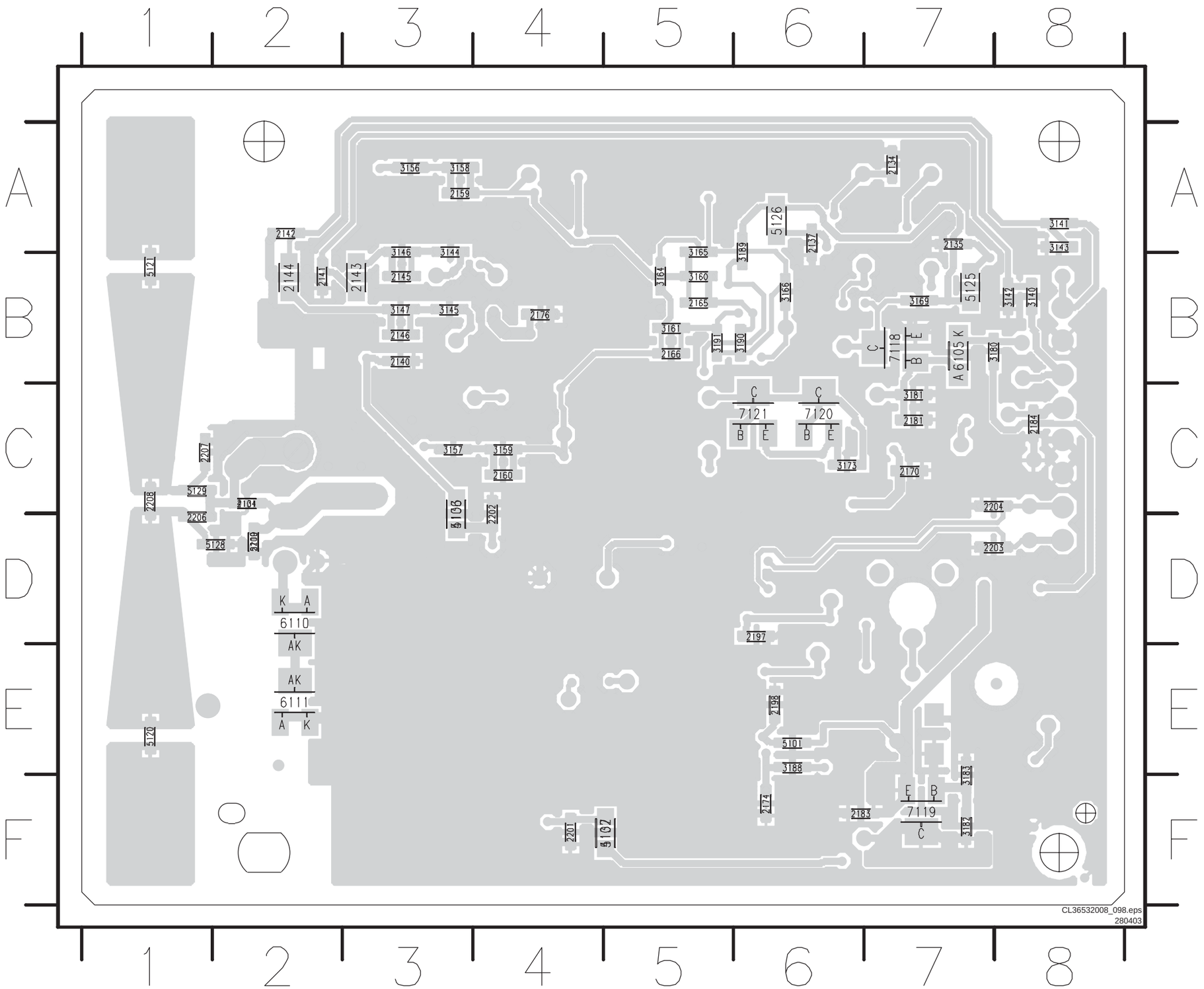
Layout Wireless Transmitter Board (Top Side)



0001	E6	2148	C5	2199	F3	3167	A5	7110	B2
0002	D7	2149	A7	2200	F6	3168	B5	7111	B3
1101	C1	2150	C6	2205	E6	3171	C3	7112	B6
1102	C7	2151	A5	3101	D3	3172	C3	7113	B5
1105	D5	2152	B5	3102	D3	3174	C3	7116	C2
1106	A2	2153	A4	3103	D4	3175	D3	7117	F2
2101	E4	2154	C4	3104	D3	3176	D2		
2102	D4	2155	A5	3105	E3	3177	C2		
2103	E4	2156	B4	3106	E3	3178	C2		
2104	D4	2157	A5	3107	D4	3179	D2		
2105	E4	2158	C5	3108	E4	3185	E2		
2106	E4	2161	A6	3109	E5	3186	E2		
2107	E4	2162	C6	3110	E4	3187	C2		
2108	F3	2163	A5	3111	F3	4101	D6		
2109	E4	2164	C5	3112	E3	4102	E5		
2110	E4	2167	A3	3113	E5	4105	D2		
2111	F3	2168	C3	3114	E5	5103	F4		
2113	F4	2169	C3	3115	E4	5104	E6		
2114	F5	2171	C4	3116	E5	5105	E6		
2115	E5	2172	C2	3117	E5	5106	E6		
2116	F4	2173	C2	3118	D5	5107	D6		
2117	E4	2175	E3	3119	E5	5108	F4		
2118	E4	2177	D2	3120	E5	5112	D6		
2120	F5	2178	B3	3121	F5	5113	F3		
2121	E5	2179	D1	3122	E5	5116	F6		
2122	F5	2180	E1	3123	E5	5117	F6		
2123	E5	2182	E2	3124	F5	5118	E6		
2124	F5	2185	F6	3125	E6	5127	D1		
2125	E6	2186	E6	3130	A2	5130	C2		
2126	E6	2187	E6	3131	A3	6101	D4		
2127	D6	2188	E6	3132	B1	6102	F3		
2128	D6	2189	E6	3148	A5	6103	D5		
2129	D6	2190	E6	3149	B5	6106	E2		
2130	D6	2191	E6	3150	A4	7101	D4		
2132	D6	2192	F6	3151	B5	7102	E5		
2133	A2	2193	D5	3152	A4	7103	F5		
2136	A3	2194	D2	3153	B5	7104	E5		
2139	B7	2195	D2	3154	A6	7105	F5		
2147	A6	2196	D2	3155	C5	7106	E6		

11-10

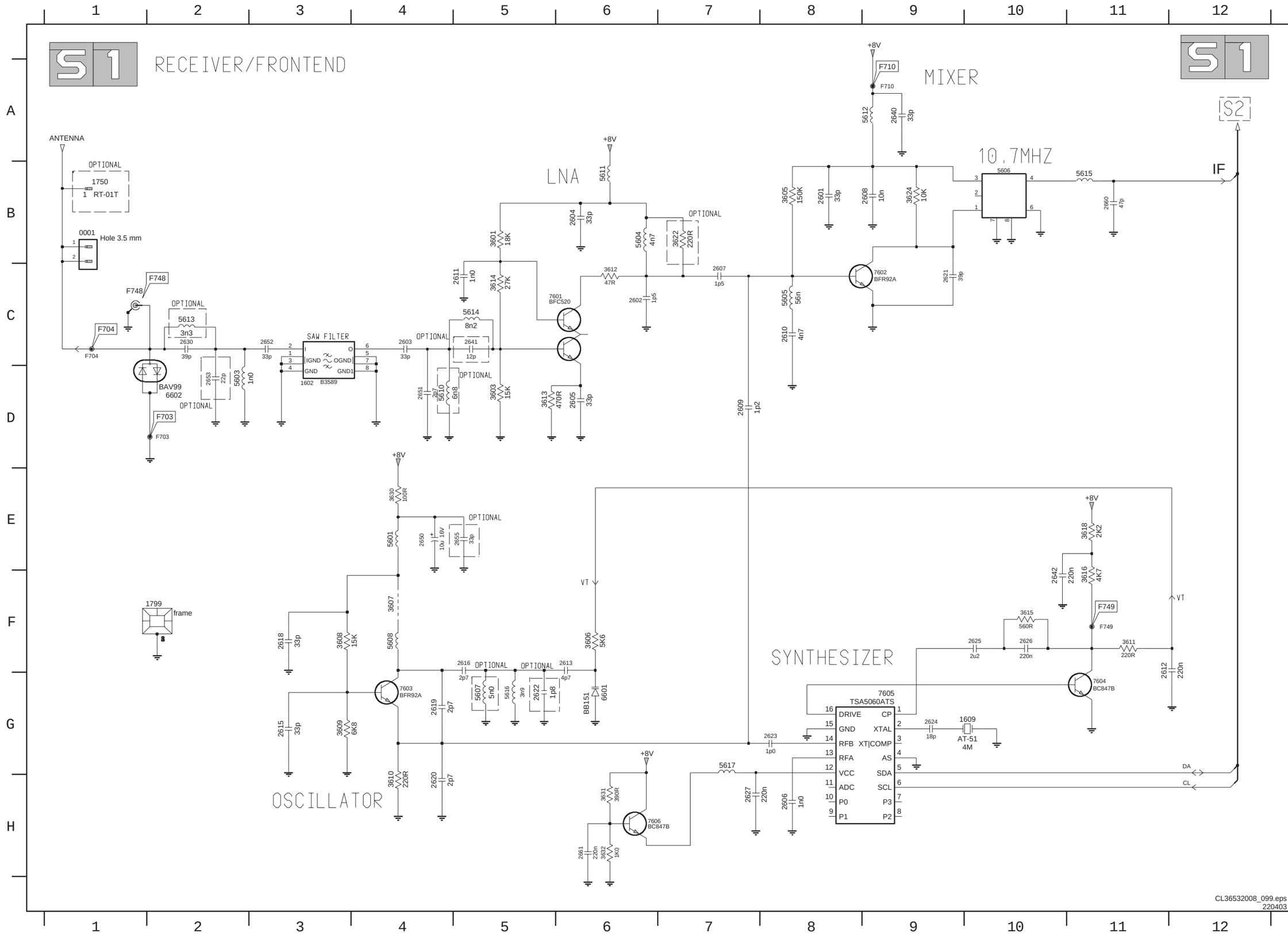
Layout Wireless Transmitter Board (Bottom Side)



2131	C2	3156	A3	4104	C2	6105	B7
2134	A7	3157	C3	4106	D3	6110	D2
2135	A7	3158	A3	4107	F5	6111	E2
2137	A6	3159	C4	5101	E6	7118	B7
2140	B3	3160	B5	5109	D2	7119	F7
2141	B2	3161	B5	5120	E1	7120	C6
2142	A2	3164	B5	5121	B1	7121	C6
2143	B3	3165	A5	5125	B7		
2144	B2	3166	B6	5126	A6		
2145	B3	3169	B7	5128	D2		
2146	B3	3173	C6	5129	C1		
2159	A3	3180	B7	5132	F5		
2160	C4	3181	C7	5133	D3		
2165	B5	3182	F7	6105	B7		
2166	B5	3183	F7	6110	D2		
2170	C7	3188	E6	6111	E2		
2174	F6	3189	A6	7118	B7		
2176	B4	3190	B6	7119	F7		
2181	C7	3191	B5	7120	C6		
2183	F6	4104	C2	7121	C6		
2184	C8	4106	D3				
2197	D6	4107	F5				
2198	E6	5101	E6				
2201	F4	5109	D2				
2202	D4	5120	E1				
2203	D7	5121	B1				
2204	C7	5125	B7				
2206	D1	5126	A6				
2207	C1	5128	D2				
2208	C1	5129	C1				
2210	D2	5132	F5				
3140	B8	5133	D3				
3141	A8	6105	B7				
3142	B8	6110	D2				
3143	A8	6111	E2				
3144	A3	7118	B7				
3145	B3	7119	F7				
3146	A3	7120	C6				
3147	B3	7121	C6				

11-11

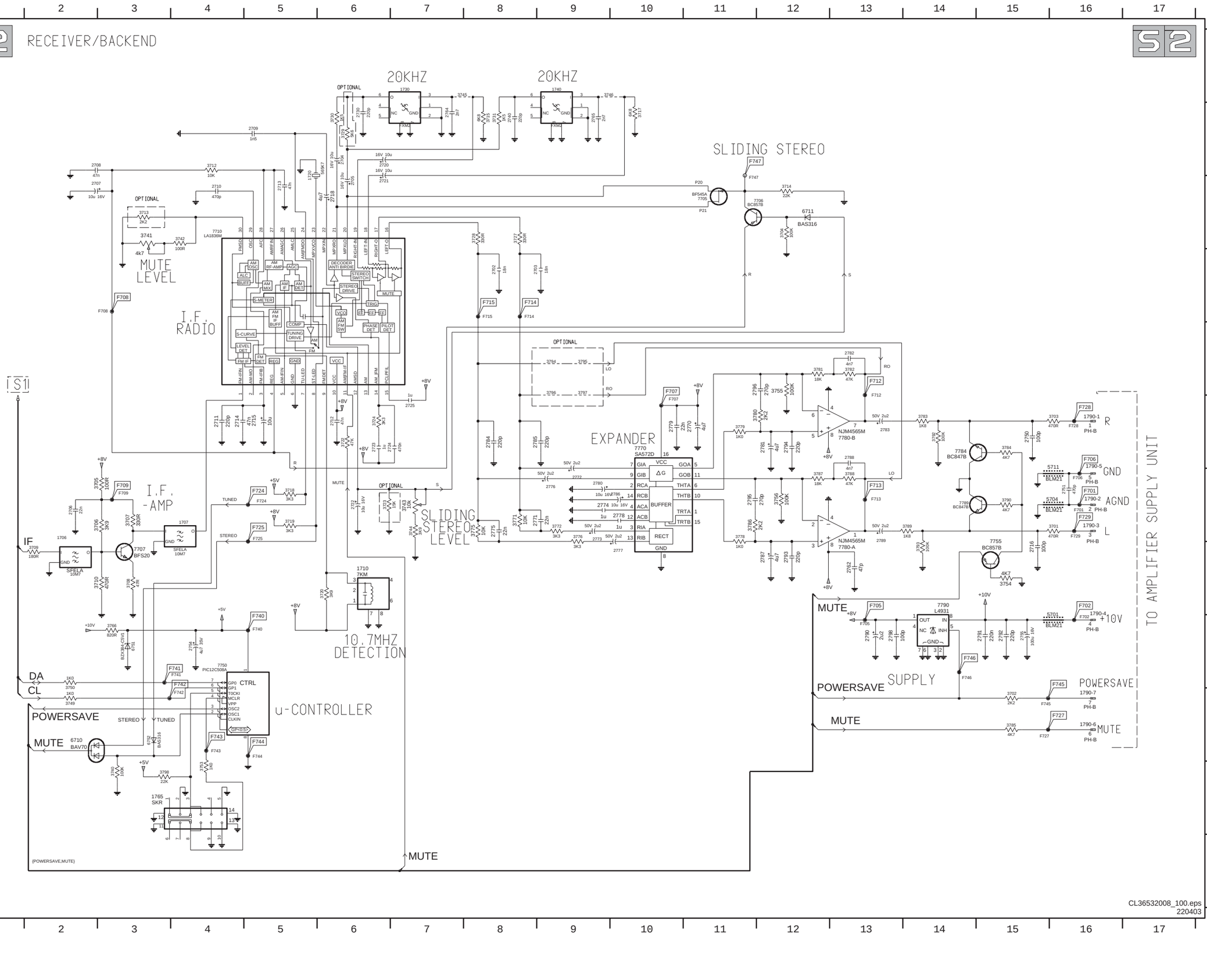
1.7.3 Wireless Receiver Board



0001 B1
1602 D3
1609 G10
1750 B1
1799 F1
2601 B8
2602 C6
2603 C4
2604 B6
2605 D6
2606 H8
2607 C7
2608 B9
2609 D7
2610 C8
2611 C5
2612 F11
2613 F6
2615 G3
2616 F5
2618 F3
2619 G4
2620 H4
2621 C9
2622 G5
2623 G8
2624 G9
2625 F10
2626 F10
2627 H7
2630 C2
2640 A9
2641 C5
2642 F10
2650 E4
2651 D4
2652 C3
2653 D2
2655 E5
2660 B11
2661 H6
3601 B5
3603 D5
3605 B8
3606 F6
3607 F4
3608 F3
3609 G3
3610 H4
3611 F11
3612 C6
3613 D5
3614 C5
3615 F10
3616 F11
3618 E11
3622 B7
3624 B9
3630 E4
3631 H6
3632 H6
5601 E4
5603 D2
5604 B6
5605 C8
5606 B10
5607 G5
5608 F4
5610 D4
5611 B6
5612 A9
5613 C2
5614 C5
5615 B11
5616 G5
5617 G7
6601 G6
6602 D2
7601 C5
7602 C9
7603 G4
7604 G11
7605 G9
7606 H7
F703 D2
F704 C1
F710 A9
F748 C1
F749 F11

11-12

RECEIVER/BACKEND

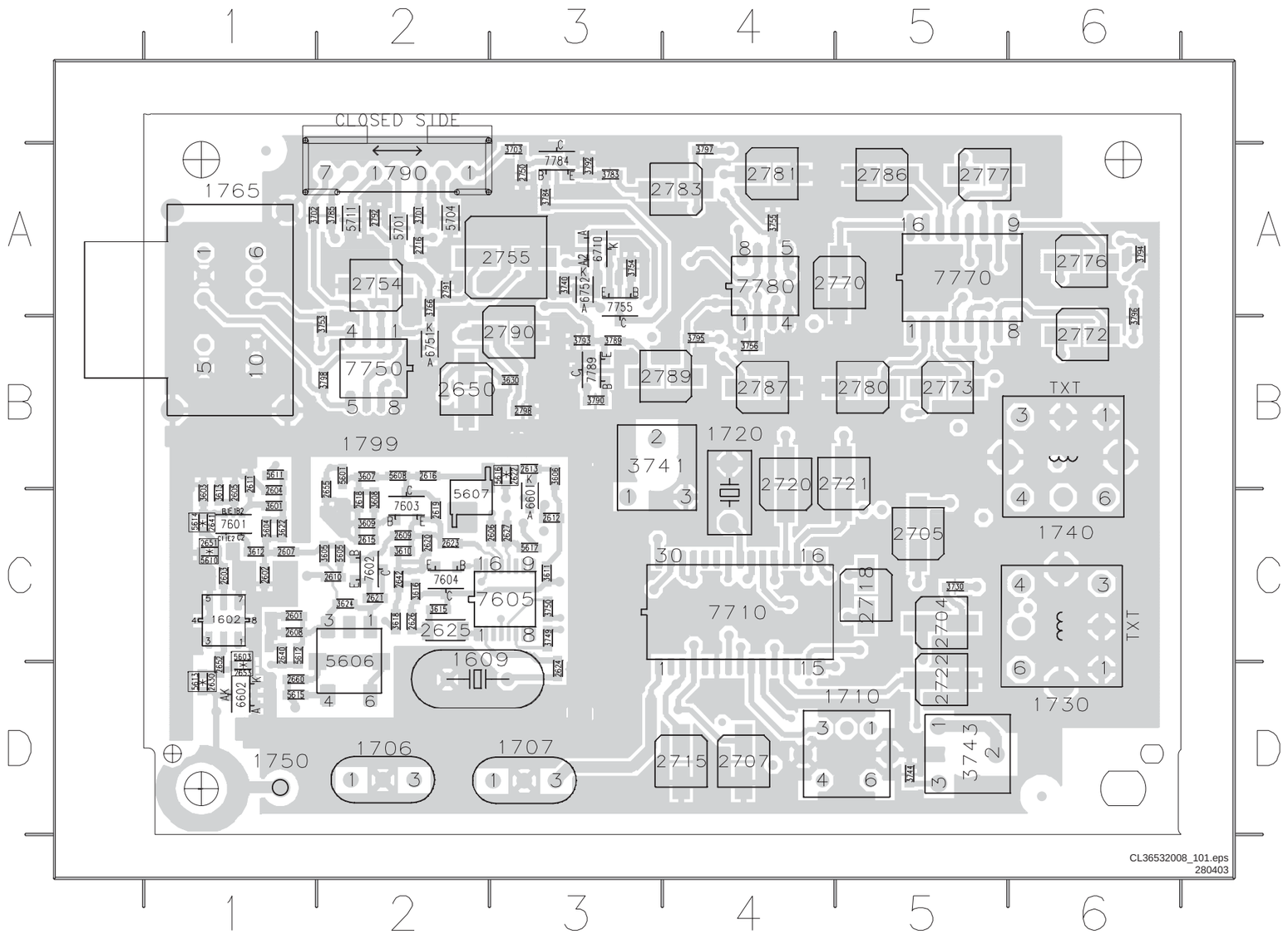


CL36532008_100.eps
220403

1706 G2
1707 G4
1710 H6
1720 B5
1730 A7
1740 A9
1765 K3
1790-1 F16
1790-2 G16
1790-3 G16
1790-4 I16
1790-5 F16
1790-6 J16
1790-7 J16
2702 D8
2703 D9
2704 B6
2705 C6
2706 G2
2707 C2
2708 B2
2709 B5
2710 C4
2711 F4
2712 F6
2713 C5
2714 F4
2715 F5
2716 H15
2718 C6
2720 B6
2721 C6
2722 G6
2723 F6
2724 F7
2725 F7
2730 B6
2740 B8
2750 F15
2751 G16
2754 I4
2755 I5
2762 H13
2770 F11
2771 G9
2772 G9
2773 G9
2774 G9
2775 G8
2776 G9
2777 H10
2778 G10
2779 F10
2780 G9
2781 F12
2782 E13
2783 F13
2784 F8
2785 F9
2786 G10
2787 H12
2788 F13
2789 G13
2790 I13
2791 I15
2792 I15
2793 H12
2794 F12
2795 G11
2796 E12
2798 I13
3701 G16
3702 J15
3703 F16
3704 C12
3705 G3
3706 G3
3707 G3
3708 H3
3709 H2
3710 H3
3712 B4
3713 C3
3714 C12
3715 B8
3717 B10
3718 G5
3719 G5
3720 H6
3722 F6
3723 G6
3724 F6
3727 C8
3728 C8
3729 B6
3730 B6
3731 B8
3740 K3
3741 C3
3742 C4
3743 G7
3744 G7
3745 A7
3746 A9
3749 J2
3750 I2
3753 K4
3754 H15
3755 E12
3756 G12
3766 I3
3771 G8
3772 G9
3775 G8
3776 G9
3778 G11
3779 F11
3780 F12
3781 E12
3782 E13
3783 F14
3784 F15
3785 J15
3786 G11
3787 G12
3788 G13
3789 G14
3790 G15
3792 F14
3793 H14
3794 E9
3795 E9
3796 E9
3797 E9
3798 K3
5701 H16
5704 G16
5711 F16
6710 J2
6711 C12
6751 I3
6752 J3
7705 C11
7706 C12
7707 H3
7710 C4
7750 I4
7755 H15
7770 F10
7780-A H13
7780-B F13
7784 F14
7789 G14
7790 H14
F701 G16
F702 I16
F705 I13
F706 G16
F707 F10
F708 D3
F709 G3
F712 F13
F713 G13
F714 D8
F715 D8
F724 G5
F725 G5
F727 J15
F728 I16
F729 I4
F740 I5
F741 I4
F742 J4
F743 J4
F744 J5
F745 J15
F746 I14
F747 C11

11-13

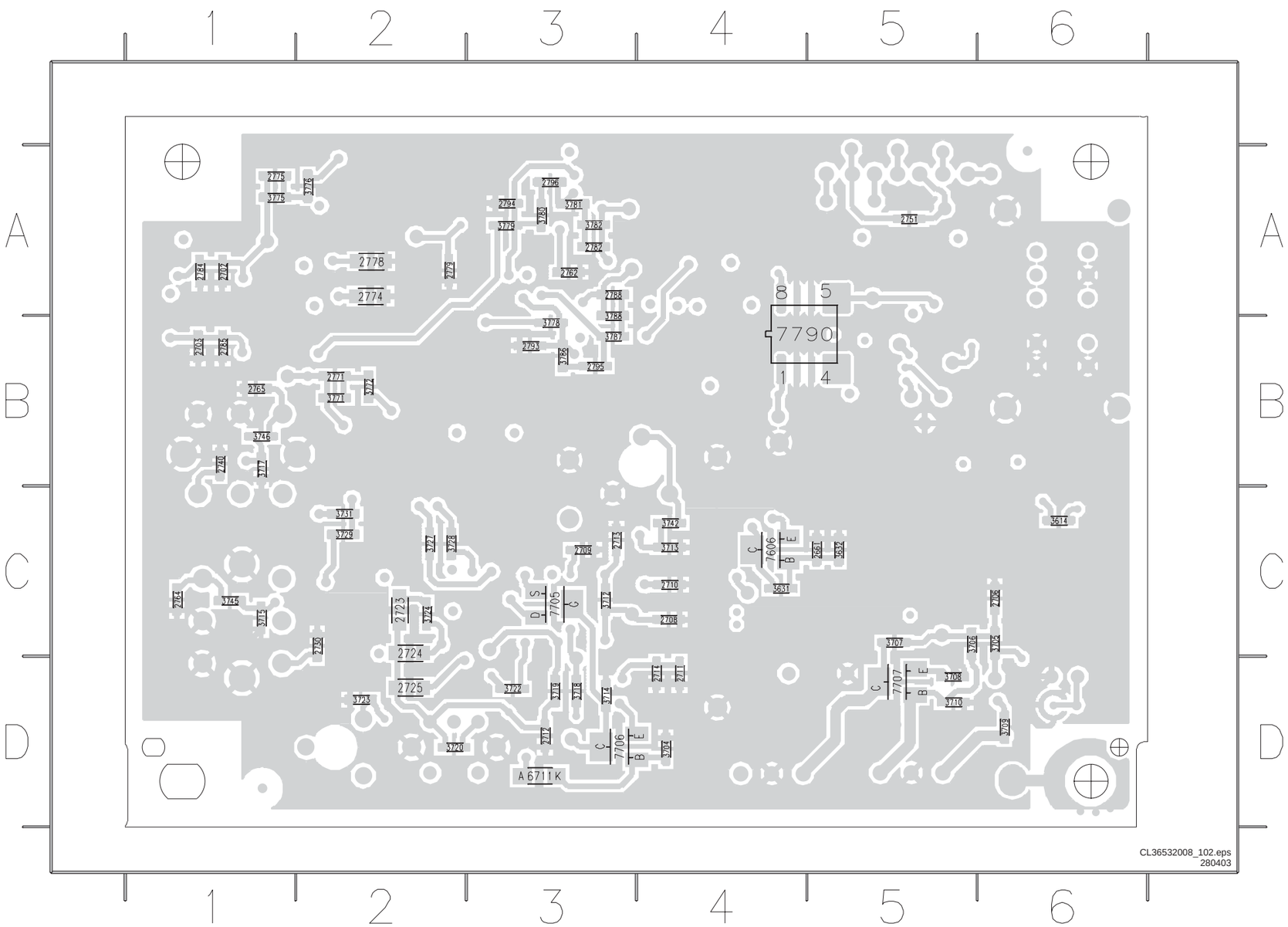
Layout Wireless Receiver Board (Top Side)



1602	C1	2655	C2	3630	B3	5711	A2
1609	D2	2660	D1	3701	A2	6601	C3
1706	D2	2704	C5	3702	A1	6602	D1
1707	D3	2705	C5	3703	A3	6710	A3
1710	D5	2707	D4	3730	C5	6751	B2
1720	C4	2715	D4	3740	A3	6752	A3
1730	C6	2716	A2	3741	B3	7601	C1
1740	B6	2718	C5	3743	D5	7602	C2
1750	D1	2720	B4	3744	D5	7603	C2
1765	A1	2721	B5	3749	C3	7604	C2
1790	A2	2722	D5	3750	C3	7605	C3
1799	C1	2750	A3	3753	B2	7710	C4
2601	C1	2754	A2	3754	A3	7750	B2
2602	C1	2755	A3	3755	A4	7755	A3
2603	C1	2770	A5	3756	B4	7770	A5
2604	C1	2772	B6	3766	A2	7780	A4
2605	C1	2773	B5	3783	A3	7784	A3
2606	C3	2776	A6	3784	A3	7789	B3
2607	C1	2777	A5	3785	A2		
2608	C1	2780	B5	3788	B3		
2609	C2	2781	A4	3790	B3		
2610	C2	2783	A4	3792	A3		
2611	B1	2786	A5	3793	B3		
2612	C3	2787	B4	3794	A6		
2613	B3	2789	B4	3795	B4		
2615	C2	2790	B3	3796	B6		
2616	B2	2791	A2	3797	A4		
2618	C2	2792	A2	3798	B2		
2619	C2	2798	B3	5601	B2		
2620	C2	3601	C1	5603	D1		
2621	C2	3603	C1	5604	C1		
2622	B3	3605	C2	5605	C2		
2623	C2	3606	B3	5606	C2		
2624	D3	3607	B2	5607	C2		
2625	C2	3608	C2	5608	B2		
2626	C2	3609	C2	5610	C1		
2627	C3	3610	C2	5611	B1		
2630	D1	3611	C3	5612	C1		
2640	C1	3612	C1	5613	D1		
2641	C1	3613	C1	5614	C1		
2642	C2	3615	C2	5615	D1		
2650	B2	3616	C2	5616	B3		
2651	C1	3618	C2	5617	C3		
2652	D1	3622	C1	5701	A2		
2653	D1	3624	C2	5704	A2		

11-14

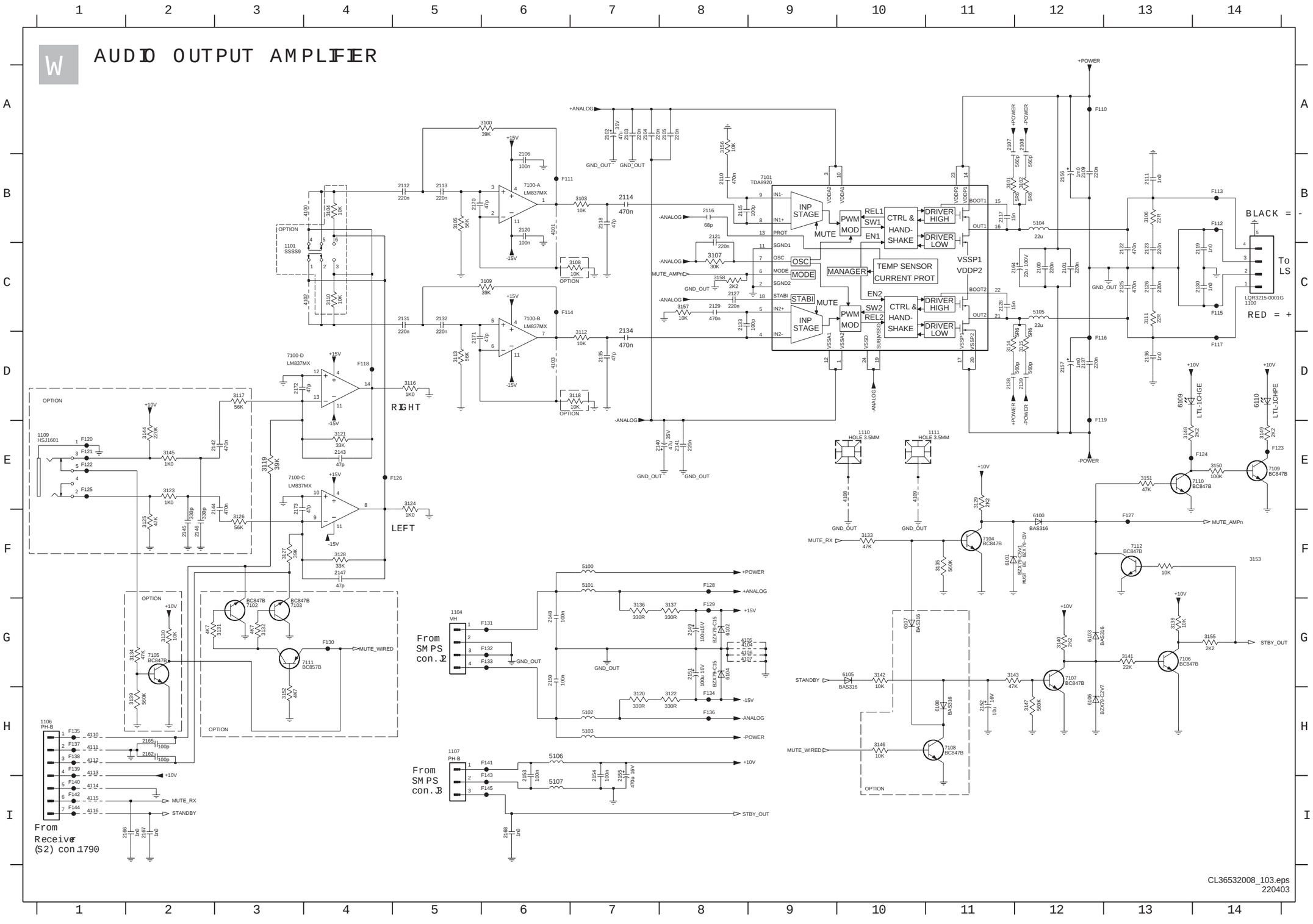
Layout Wireless Receiver Board (Bottom Side)



2661	C5	3715	C1	F715	A1		
2702	A1	3717	B1	F724	D3		
2703	B1	3718	D3	F725	C3		
2706	C6	3719	D3	F727	A5		
2708	C4	3720	D2	F728	A5		
2709	C3	3722	D3	F729	A5		
2710	C4	3723	D2	F740	B5		
2711	D4	3724	C2	F741	B5		
2712	D3	3727	C2	F742	B5		
2713	C3	3728	C2	F743	B5		
2714	D4	3729	C2	F744	B5		
2723	C2	3731	C2	F745	A6		
2724	C2	3742	C4	F746	A5		
2725	D2	3745	C1	F747	D3		
2730	C2	3746	B1	F748	D6		
2740	B1	3771	B2	F749	C4		
2751	A5	3772	B2				
2762	A3	3775	A1				
2764	C1	3776	A2				
2765	B1	3778	B3				
2771	B2	3779	A3				
2774	A2	3780	A3				
2775	A1	3781	A3				
2778	A2	3782	A3				
2779	A2	3786	B3				
2782	A3	3787	B3				
2784	A1	3788	B3				
2785	B1	6711	D3				
2788	A3	7606	C4				
2793	B3	7705	C3				
2794	A3	7706	D3				
2795	B3	7707	D5				
2796	A3	7790	B4				
3614	C6	F701	A5				
3631	C4	F702	A5				
3632	C5	F703	D6				
3704	D4	F704	D6				
3705	C6	F705	B4				
3706	C5	F706	A5				
3707	C5	F707	A2				
3708	D5	F708	C3				
3709	D6	F709	C5				
3710	D5	F710	D6				
3712	C3	F712	A3				
3713	C4	F713	A3				
3714	D3	F714	B1				

11-15

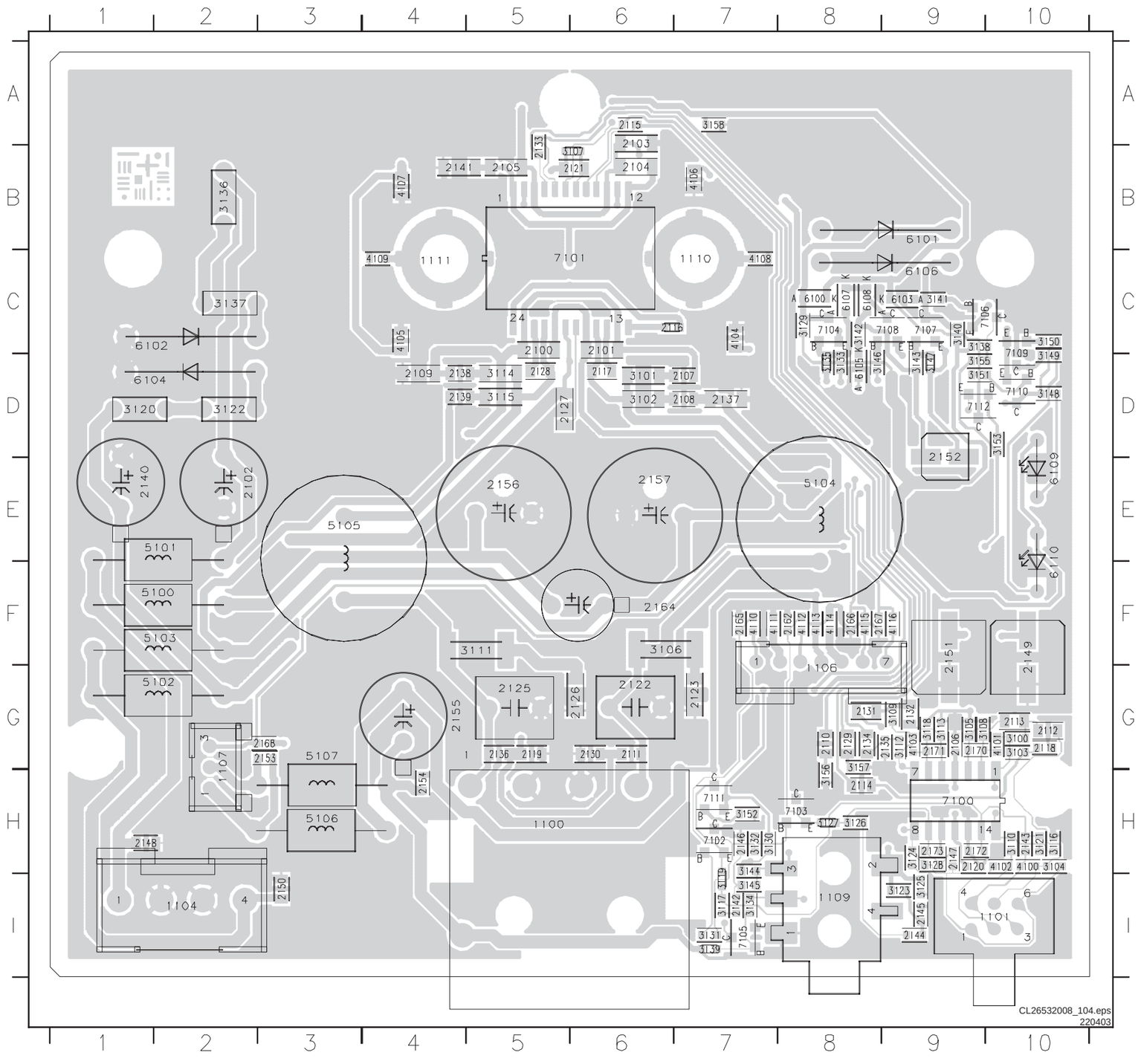
1.7.4 Wireless Audio Amplifier Board



1100 C14
1101 C3
1104 G5
1106 H1
1107 H5
1109 E1
1110 E10
1111 E11
2100 C12
2101 C12
2102 A7
2103 A7
2104 A7
2105 A8
2106 B6
2107 A11
2108 A12
2109 B12
2110 B8
2111 B13
2112 B5
2113 B5
2114 B7
2115 B8
2116 B8
2117 B11
2118 B7
2119 C14
2120 B6
2121 C8
2122 C13
2123 C13
2125 C13
2126 C13
2127 C8
2128 C11
2129 C8
2130 C14
2131 C5
2132 C5
2133 C8
2134 D7
2135 D7
2136 D13
2137 D12
2138 D11
2139 D12
2140 E8
2141 E8
2142 E3
2143 E4
2144 F3
2145 F2
2146 F2
2147 F4
2148 G6
2149 G8
2150 G6
2151 G8
2152 H11
2153 E5
2154 E7
2155 E7
2156 B12
2157 D12
2162 H2
2164 C12
2165 H2
2166 E2
2167 E2
2168 E5
2170 B5
2171 D5
2172 D3
2173 F3
3100 A6
3101 B11
3102 B12
3103 B7
3104 B4
3105 B5
3106 B13
3107 C8
3108 C7
3109 C6
3110 C4
3111 C13
3112 D7
3113 D5
3114 D11
3115 D12
3116 D5
3117 D3
3118 D7
3119 E3
3120 H7
3121 E4
3122 H8
3123 E2
3124 F5
3125 F2
3126 F3
3127 F3
3128 F4
3129 E11
3130 G2
3131 G3
3132 G3
3133 F10
3134 G2
3135 F11
3136 G7
3137 G8
3138 G13
3139 H2
3140 G12
3141 G13
3142 G10
3143 G12
3144 E2
3145 E2
3146 H10
3147 H12
3148 E13
3149 E14
3150 E14
3151 E13
3152 H3
3153 F14
3155 G14
3156 A8
3157 C8
3158 C8
4100 B4
4101 B6
4102 C4
4103 D6
4104 G9
4105 G9
4106 G9
4107 G9
4108 E10
4109 E10
4110 H1
4111 H1
4112 H1
4113 H1
4114 H1
4115 H1
4116 H1
5100 F7
5101 F7
5102 H7
5103 H7
5104 B12
5105 C12
5106 H6
5107 H6
6100 F12
6101 F11
6102 G8
6103 G12
6104 G8
6105 G10
6106 H12
6107 G10
6108 H11
6109 D13
6110 D14
7100-A B6
7100-B C6
7100-C E3
7100-D D3
7101 B9
7102 G3
7103 G3
7104 F11
7105 E2
7106 G13
7107 G12
7108 H11
7109 E14
7110 E14
7111 G4
7112 F13
F110 A12
F111 B6
F112 B14
F113 B14
F114 C6
F115 C14
F116 D12
F117 D14
F118 D4
F119 E12
F120 E1
F121 E1
F122 E1
F123 E14
F124 E14
F125 E1
F126 E5
F127 F13
F128 F8
F129 G8
F130 G4
F131 G6
F132 G6
F133 G6
F134 H8
F135 H1
F136 H8
F137 H1
F138 H1
F139 I1
F140 I1
F141 H6
F142 I1
F143 I5
F144 I1
F145 I5

11-16

Layout Wireless Audio Amplifier Board (Top Side)



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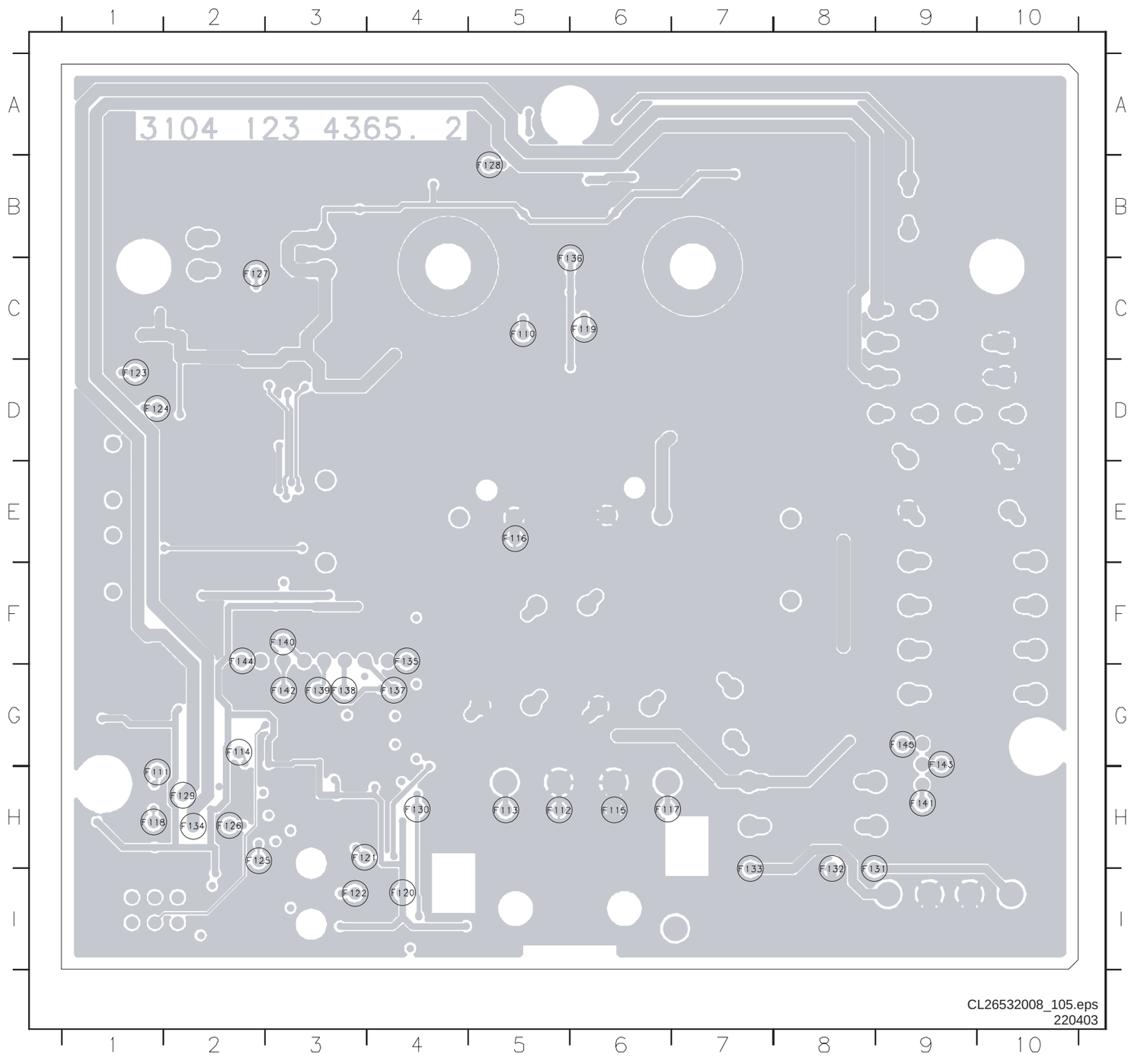
220403

1100	H5	2149	F10	3135	D8	6106	C9
1101	I10	2150	I3	3136	B2	6107	C8
1104	I2	2151	F9	3137	C2	6108	C8
1106	G8	2152	D9	3138	C9	6109	E10
1107	G2	2153	G3	3139	I7	6110	F10
1109	I8	2154	H4	3140	C9	7100	H9
2100	C5	2155	G4	3141	C9	7101	C6
2101	C6	2156	E5	3142	C8	7102	H7
2102	E2	2157	E6	3143	D9	7103	H8
2103	A6	2162	F8	3144	H7	7104	C8
2104	B6	2164	F6	3145	I7	7105	I7
2105	B5	2165	F7	3146	D8	7106	C9
2106	G9	2166	F8	3147	D9	7107	C9
2107	D7	2167	F8	3148	D10	7108	C9
2108	D7	2168	G3	3149	D10	7109	C10
2109	D4	2170	G9	3150	C10	7110	D10
2110	G8	2171	G9	3151	D9	7111	H7
2111	G6	2172	H9	3152	H7	7112	D9
2112	G10	2173	H9	3153	D10		
2113	G10	3100	G10	3155	D9		
2114	H8	3101	D6	3156	H8		
2115	A6	3102	D6	3157	G8		
2116	C6	3103	G10	3158	A7		
2117	D6	3104	H10	4100	H10		
2118	G10	3105	G9	4101	G10		
2119	G5	3106	F6	4102	H10		
2120	H9	3107	B6	4103	G9		
2121	B6	3108	G9	4104	C7		
2122	G6	3109	G9	4105	C4		
2123	G7	3110	H10	4106	B7		
2125	G5	3111	F5	4107	B4		
2126	G6	3112	G9	4108	C7		
2127	D5	3113	G9	4109	C4		
2128	D5	3114	D5	4110	E7		
2129	G8	3115	D5	4111	F7		
2130	G6	3116	H10	4112	F8		
2131	G8	3117	I7	4113	F8		
2132	G9	3118	G9	4114	F8		
2133	B5	3119	I7	4115	F8		
2134	G8	3120	D1	4116	F9		
2135	G9	3121	H10	5100	F2		
2136	G5	3122	D2	5101	E2		
2137	D7	3123	I9	5102	G2		
2138	D4	3124	H9	5103	F2		
2139	D4	3125	I9	5104	E8		
2140	E1	3126	H8	5105	E3		
2141	B4	3127	H8	5106	H3		
2142	I7	3128	H9	5107	G3		
2143	H10	3129	C8	6100	C8		
2144	I9	3130	H7	6101	B9		
2145	I9	3131	I7	6102	C1		
2146	H7	3132	H7	6103	C9		
2147	H9	3133	D8	6104	D1		
2148	H1	3134	I7	6105	D8		

11-17

Layout Wireless Audio Amplifier Board (Bottom Side)

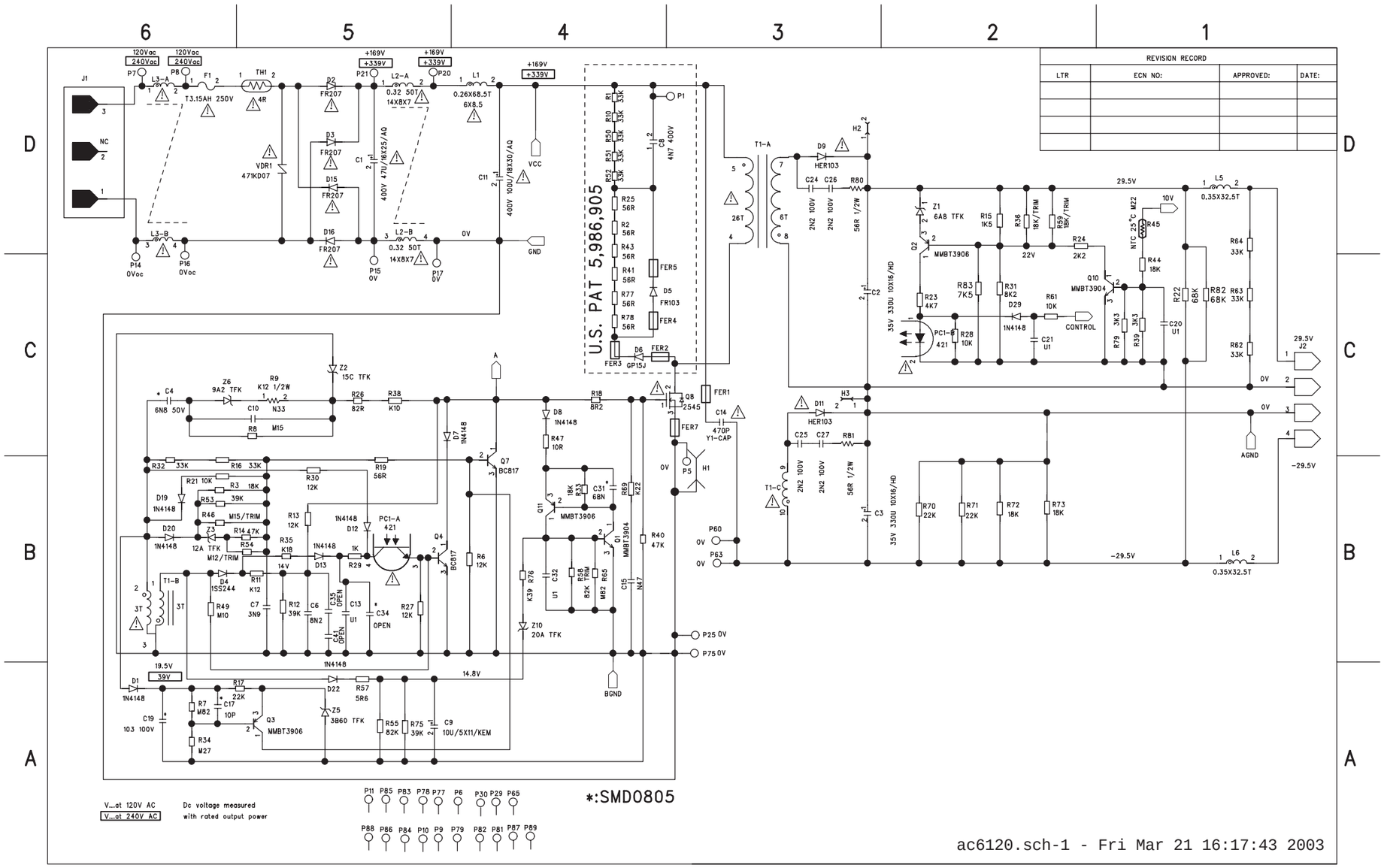


F110 C5
F111 G1
F112 H5
F113 H5
F114 G2
F115 H6
F116 E5
F117 H6
F118 H1
F119 C6
F120 I4
F121 H3
F122 I3
F123 C1
F124 D1
F125 H2
F126 H2
F127 B2
F128 A5
F129 H2
F130 H4
F131 H8
F132 H8
F133 H7
F134 H2
F135 F4
F136 B6
F137 G4
F138 G3
F139 G3
F140 F3
F141 H9
F142 G3
F143 G9
F144 F2
F145 G9

11-18

1.7.5 Wireless SMPS Board

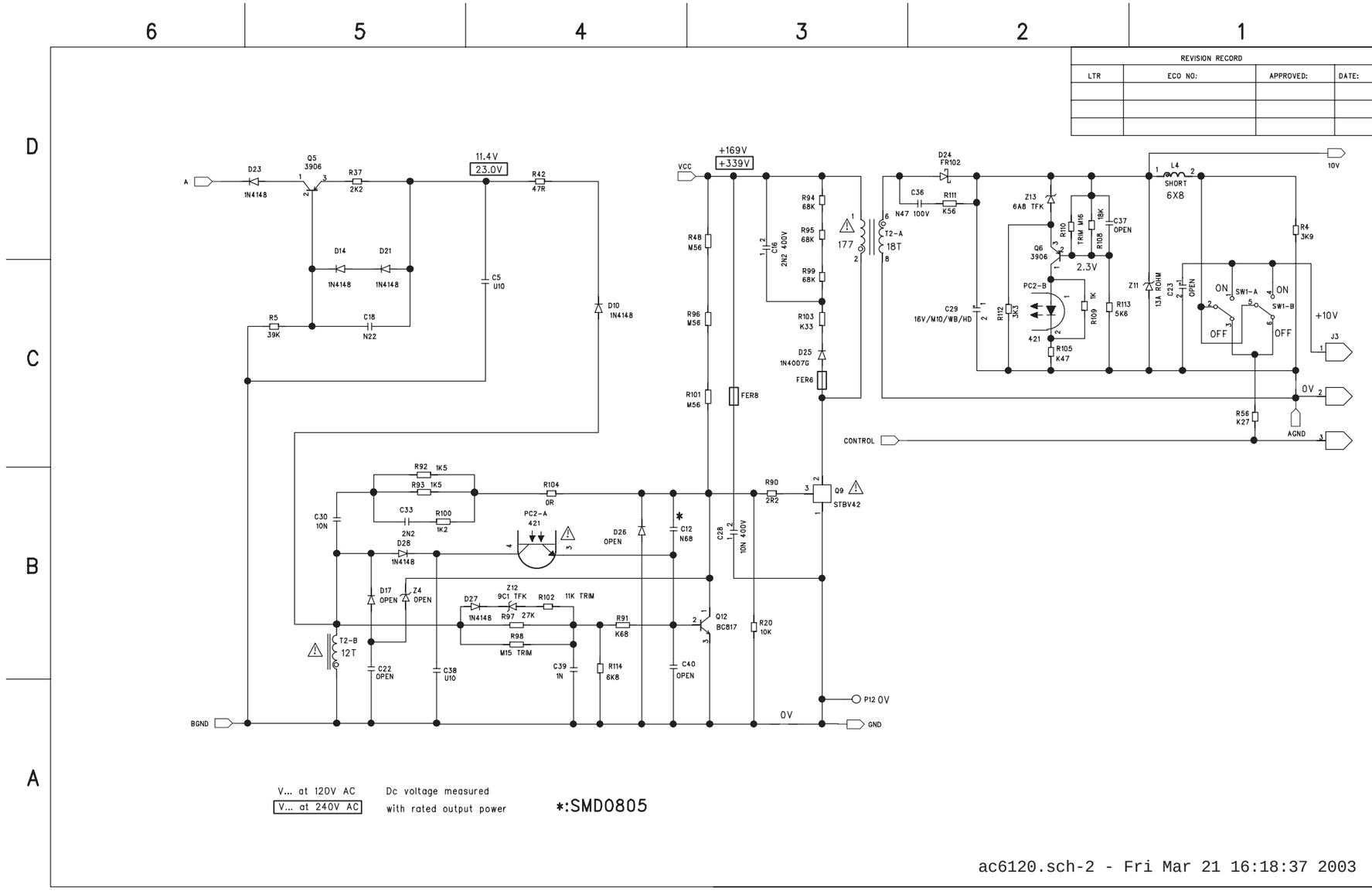
SMPS Part A



C1	D5	J1	D6	R40	B4
C3	B3	J2	C1	R41	C4
C4	C6	L1	D4	R43	D4
C6	B5	L2A	D5	R44	C1
C7	B5	L2B	D5	R45	D1
C8	D4	L3A	D6	R46	B6
C9	A5	L3B	D6	R47	C4
C10	C5	L5	D1	R49	B6
C11	D4	L6	B1	R50	D4
C13	B5	PC1A	B5	R51	D4
C14	C3	PC1B	C2	R52	D4
C15	B4	Q1	B4	R53	B6
C17	A6	Q2	D2	R54	B5
C19	A6	Q3	A5	R55	A5
C20	C1	Q4	B5	R57	A5
C21	C2	Q7	B4	R58	B4
C24	D3	Q8	C3	R59	D2
C25	C3	Q10	C1	R61	C2
C26	D3	Q11	B4	R62	C1
C27	C3	R1	D4	R63	C1
C31	B4	R2	D4	R64	D1
C32	B4	R3	B6	R65	B4
C34	B5	R6	B4	R69	B4
C35	B5	R7	A6	R70	B2
C41	B5	R8	C5	R71	B2
D1	A6	R9	C5	R72	B2
D2	D5	R10	D4	R73	B2
D3	D5	R12	B5	R75	A5
D4	B6	R13	B5	R76	B4
D5	C4	R14	B5	R77	C4
D6	C4	R15	D2	R78	C4
D7	C5	R16	B6	R79	C1
D8	C4	R17	A5	R80	D3
D9	D3	R18	C4	R81	C3
D11	C3	R19	B5	R82	C1
D12	B5	R21	B6	R83	C2
D13	B5	R22	C1	R11	B5
D15	D5	R23	C2	T1A	D3
D16	D5	R24	D2	T1B	B6
D19	B6	R25	D4	T1C	B3
D20	B6	R26	C5	TH1	D5
D22	A5	R27	B5	VDR1	D5
D29	C2	R28	C2	Z1	D2
F1	D6	R29	B5	Z2	C5
FER1	C3	R30	B5	Z3	B6
FER2	C4	R31	C2	Z5	A5
FER3	C4	R32	B6	Z6	C6
FER4	C4	R33	B4	Z10	B4
FER5	C4	R34	A6		
FER7	C3	R35	B5		
H1	B3	R36	D2		
H2	D3	R38	C5		
H3	C3	R39	C1		

11-19

SMPS Part B



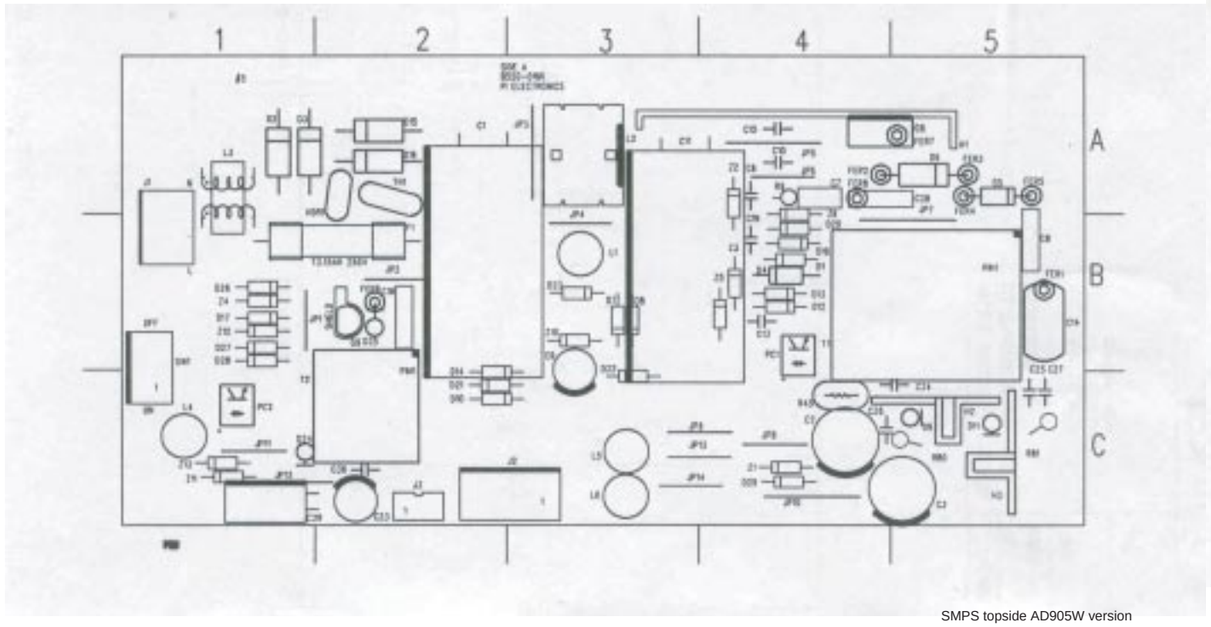
C5	C4	R92	B5
C12	B4	R93	B5
C16	D3	R94	D3
C18	C5	R95	D3
C22	B5	R96	C3
C23	C1	R97	B4
C28	B3	R98	B4
C29	C2	R99	C3
C30	B5	R100	B5
C33	B5	R101	C3
C36	D2	R102	B4
C37	D2	R103	C3
C38	B5	R104	B4
C39	B4	R105	C2
C40	B4	R108	D2
D10	C4	R109	C2
D14	C5	R110	D2
D17	B5	R111	D2
D21	C5	R112	C2
D23	D6	R113	C2
D24	D2	R114	B4
D25	C3	SW1A	C1
D26	B4	T2A	D3
D27	B4	T2B	B5
D28	B5	Z4	B5
FER6	C3	Z11	C1
FER8	C3	Z12	B4
J3	C1	Z13	D2
L4	D1		
PC2A	B4		
PC2B	C2		
Q5	D5		
Q6	D2		
Q9	B3		
Q12	B3		
R4	D1		
R5	C5		
R20	B3		
R37	D5		
R42	D4		
R48	D3		
R56	C1		
R90	B3		
R91	B4		

Layout Wireless SMPS Board (Top Side)

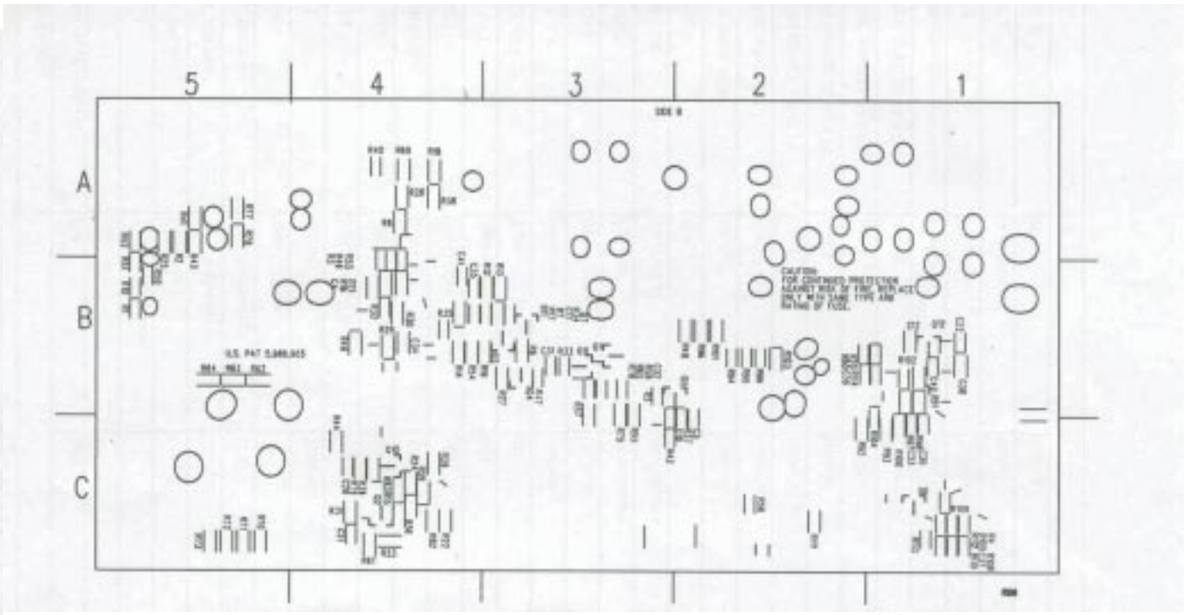
C1	A2	C19	B4	D5	A5	D19	B4	FER2	A4	L1	B3	R81	C5	Z11	C1
C2	C4	C23	C2	D6	A5	D20	B4	FER3	A5	L2	A3	SW1	B1	Z12	B1
C3	C5	C24	C5	D7	B3	D21	C2	FER4	A5	L3	A1	T1	B5	Z13	C1
C6	A4	C25	C5	D8	B3	D22	C3	FER5	A5	L4	C1	T2	C2	SHIELD	B2
C7	A4	C26	C4	D9	C5	D23	B3	FER6	B2	L5	C3	TH1	A2		
C8	B5	C27	C5	D10	C2	D24	C1	FER7	A5	L6	C3	VDR1	A2		
C8	B5	C28	A5	D11	C5	D25	B2	FER8	A4	PC1	C4	Z1	C4		
C9	B3	C29	C1	D12	C5	D26	B1	H1	A5	PC2	C1	Z2	A4		
C11	A3	C36	C2	D13	B4	D27	B1	H2	C5	Q8	A5	Z3	B4		
C13	B4	D1	B4	D14	C2	D28	B1	H3	C5	Q9	B2	Z4	B1		
C14	B5	D2	A1	D15	A2	D29	C4	J1	A1	R9	A4	Z5	B4		
C15	A4	D3	A1	D16	A2	F1	B2	J2	C3	R45	A4	Z6	B4		
C16	B2	D4	B4	D17	B1	FER1	B5	J3	C2	R80	C5	Z10	B3		

Layout Wireless SMPS Board (Bottom Side)

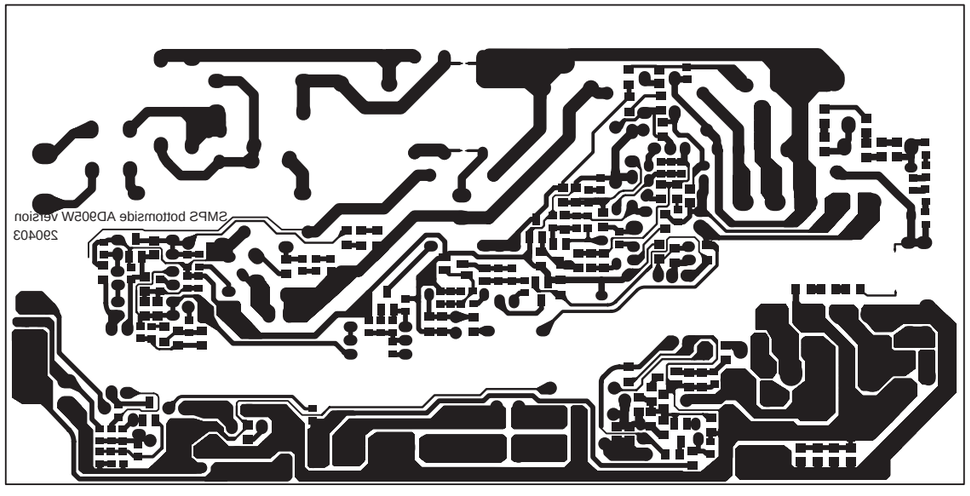
B3	B4	C32	B3	Q5	B2	R8	A4	R24	C4	R37	C2	R52	A5	R65	B3	R78	A5	R99	B2
B18	A4	C33	C1	Q6	C1	R10	B5	R25	A5	R38	A4	R53	B4	R66	C4	R79	C4	R100	C1
B49	B4	C34	B4	Q7	B3	R11	B4	R26	A4	R39	C4	R54	B4	R67	C5	R82	C4	R101	B2
C4	B4	C35	B4	Q10	C4	R12	B3	R27	B3	R40	A4	R55	C3	R68	B2	R83	C4	R102	B1
C5	C2	C37	C1	Q11	B3	R13	B3	R28	C4	R41	A5	R56	C2	R69	A4	R90	B2	R103	B2
C12	B1	C38	C1	Q12	B1	R14	B4	R29	B4	R42	C2	R57	B3	R70	C5	R91	B1	R104	C1
C17	B3	C39	B2	R1	B5	R15	C4	R30	B4	R43	A5	R58	B3	R71	C5	R92	C2	R105	C1
C18	C2	C40	B1	R2	A5	R16	B4	R31	C4	R44	C4	R59	C4	R72	C5	R93	C1	R108	C1
C20	C4	C41	B4	R2	C4	R17	B4	R32	C4	R46	B4	R60	A5	R73	C5	R94	B2	R109	C1
C21	C4	Q1	B3	R4	C1	R19	B3	R33	B3	R47	B3	R61	C4	R74	C2	R95	B2	R110	C1
C22	B4	Q2	C4	R5	B3	R20	B1	R34	B3	R48	B2	R62	B5	R75	C3	R96	B2	R111	C2
C30	C1	Q3	B3	R6	B3	R21	B4	R35	B4	R50	B5	R63	B5	R76	C3	R97	B1	R112	C1
C31	B3	Q4	B4	R7	B3	R23	B3	R36	C4	R51	B5	R64	B5	R77	A5	R98	B1	R113	C1
																		R114	B1



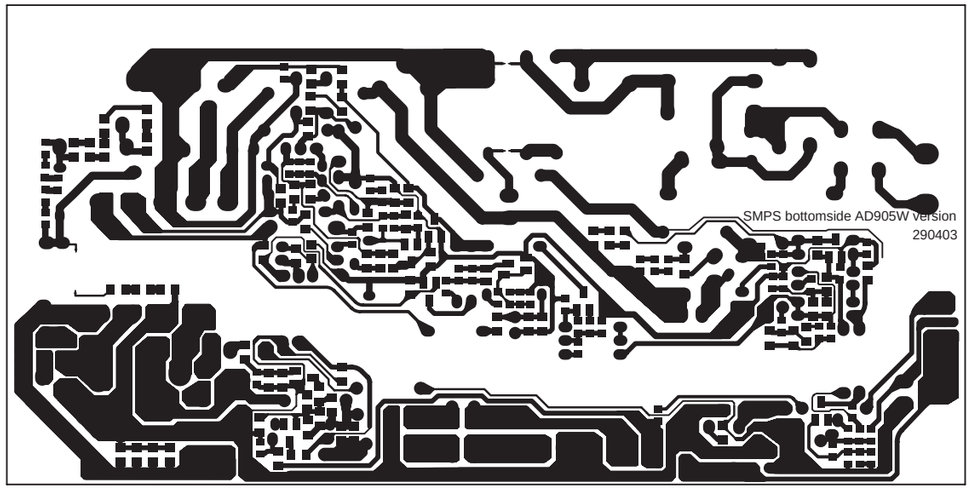
SMPS topside AD905W version
290403



SMPS bottomside AD905W version
290403



SMPS bottomside AD905W version
290403



SMPS bottomside AD905W version
290403

1.8 Circuit descriptions

The Circuit description of the wireless surround system.
The complete Wireless surround system consists of:
transmitter part Tx: interface-board and transmitter board
receiver part RX: receiver board, amplifier board and SMPSupply part

Loudspeaker boxes, per equipment defined.
The interface board can be part of a TV set (EM6E-chassis) or a separate board in the transimitter part in case of the AV Entertainment (DVD-receiver) application.
transmitter and receiver are described as one system, amplifier board is per application (TV or AV) adapted.

1.8.1. Transmitter Interface board:

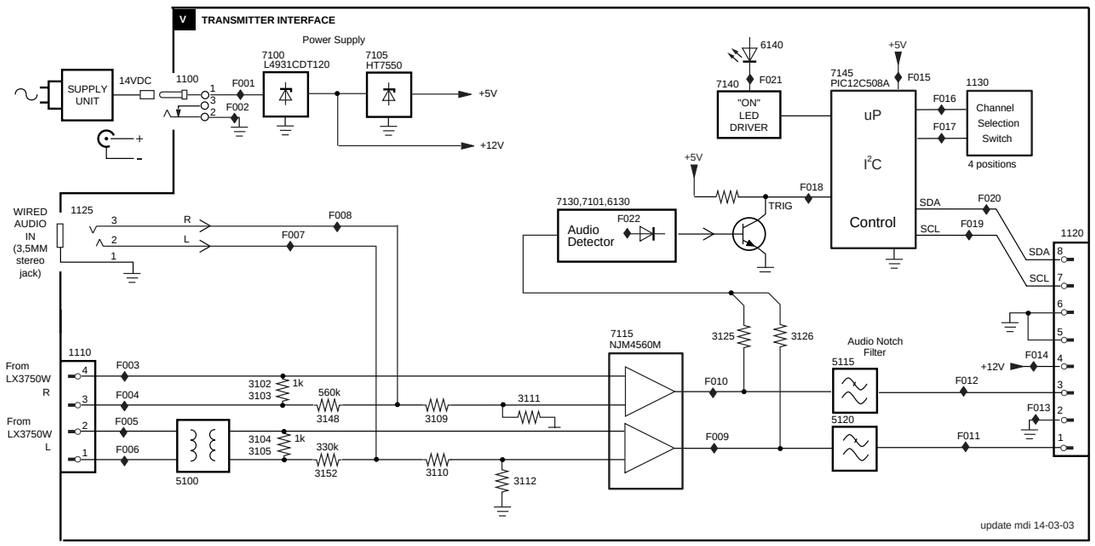


Figure 1-7 Block diagram transmitter interface

General

The transmitter interface (TX-interface) is intended to deliver all necessary audio and I²C control signals to the transmitter. The interface is capable to deliver the specific I²C protocols for the selection of the 4 channels, the power-up and power down sequence. Also an audio detector and a led control circuit is on the board, all controlled by the processor. The used microcontroller is a PIC12C508A. There is only one software version, which can handle automatically the 2 possible TX frequencies (864 and 914 MHz) in AV application. For TV application the interface function is integrated in the corresponding TV set and controls via I²C commands the 2 frequences (433 and 864 MHz).
Besides the I²C, all audioconditiong is done by a dual opamp NJM4560M.
A 23 kHz pilot notch filter is formed by both coils 5115 and 5120, this to avoid interference with the used pilot of the TX.
The AV interface transmitter combination has always to be used with the recommended mains power adaptor of 14Vdc/ 150mA. (There is a EUR, UK and USA version)
Input / output - sense. :
Full modulation of the TX transmitter: on both right and left out (pin 1 and 3 of connector 1120), 0.42V rms (or 1.1653V peak to peak), this means for the AV interface: 20 Vrms input on right and left input. For TV 3V rms input on right and left input.
Start modulation:
At power-up: auto start of the interface and TX transmitter for at least 4 minutes; when no audio on one of the inputs >0.1 V for a period of 4 minutes then the Processor shuts down the modulation of the TX transmitter (LED off)
Tx in off mode: (TX transmitter powered, no modulation and LED off) Start of the modulation and LED on by applying minimum 0.1Vrms on left or right input

Frequency response: Response is flat (+/- 1.5dB) between 100Hz and 15kHz for both channels
One channel-input is built up by using an audiotrafo to make the coupling towards source (LX3750 Home cinema DVD player with incorporated class D amplifiers) This causes a difference in f-response especially for low frequencies below 100Hz for left and right channel, however not audible in its application.
Input impedance: < 1 K ohm
Led-functionality: built in led indication: Red = ON, power on, transmitter active
Red = OFF, power on, no modulation

Audio-input section:

The right audio input channel is different from the left input: left uses a low cost audio transfo, since there has to be a complete separation between the left and right speaker outs of the DVD player LX3750. Of course this gives a small difference in frequency response, but absolutely not audible in its application. Pin 4 is connected straight to one output pin of the DVD speaker out: this to have a “reference - ground”. Input impedance for both channels is always below 1Khz, making the unit immune for all kinds of interferences on the speaker lines. The rather high input levels (up to 20V rms /each channel) are conditioned and brought to a level of nominal 0.42 Vrms on pin 1 and 3 of 1120. This 0.42 Vrms gives 50Khz FM deviation in the transmitter.
Extra protection is established by the fast diodes 6142 and 6144. DC-reference is made by 3115-3116 and 2116. A 23Khz notch filter 5115 / 5120 is built in to avoid interferences with the used pilot frequency of the transmitter.

Audio detector:

A part of the audio info is fed to the audio detector built up around 7101-A and 7101-B. Basically it’s a two-stage amplifier with a very high gain factor (3135/3133 and 3136/3134). A square signal has to be found on the output of 7101-A. This block-wave is fed to the rectifier/ integrator around 6130. In normal operation 7135 is always conducting, pulling down the level on the trig-input of the microprocessor 7145. As long this input is low the connected transmitter is enabled by the microprocessor. When no audio input, the trig input comes high (5V), and the internal timer of the processor counts down till 4 minutes have past away. After this four minutes (approx.) the transmitter will be disabled = no modulation and red led off.
A very low audio input “trigs” the processor and the transmitter starts up again. (Led = red). Four-channel selection is done by 2 lines (LSB - MSB) on the processor.

Power supply:

The unit operates on a 14 Vdc mains power adaptor: 12Vdc, mainly for the transmitter, is furnished by 7100 -L4931CDT120, which is a low drop regulator. The 5 Vdc for the PIC is made by the HT7550 low power regulator.

1.8.2. Wireless System

GENERAL INTRODUCTION

The wireless system is intended for stereo sound in the range from 20 Hz to 20 kHz.
It can be used for normal L/R stereo sound or for the surround channels in Dolby systems.
The system has an analogue sound processing system (companding – expanding) and uses synthesised tuning at both the transmitter and receiver side. There are frequency executions available in different frequency bands: 433 MHz (some EU), 864 MHz (EU) and 914 MHz (US).
In each particular frequency band, there is a choice between 4 different channels or frequencies.

SYSTEM CONSIDERATIONS

The Wireless system uses a very high performance audio processing that allows up to 100 dB dynamic range to be transmitted over a classic analogue link. Through the companding effect at the transmitter (reducing the dynamic range by a factor of 2 in dB) and by an expanding effect in the receiver (increasing the dynamic range by a factor of 2 in dB). In addition the system has the possibility to maintain the high S/ N up to low RX fieldstrengths by applying sliding stereo (this means reducing the stereo effect at low signal fieldstrengths)
Pre-emphasis (at TX) / de-emphasis (at RX) technique is with15 µS time constance.
Since the signal processing is analogue, there is a low latency in the system of < 15 µS between input TX and output RX.
The receiver part has a power save mode that will be initiated automatically when no signal to reduce power consumption.
The system uses normal FM modulation / demodulation and also uses the Zenith stereo principle. However, the frequencies used are different in this respect: Subcarrier freq. = 3 * 15625 Hz = 46.875 kHz (chosen because interference zero-beats with the TV line freq). Consequently the pilot freq. is 23.4375 kHz (half of subcarrier).

TRANSMITTER

The block diagram of the transmitter is as follows:

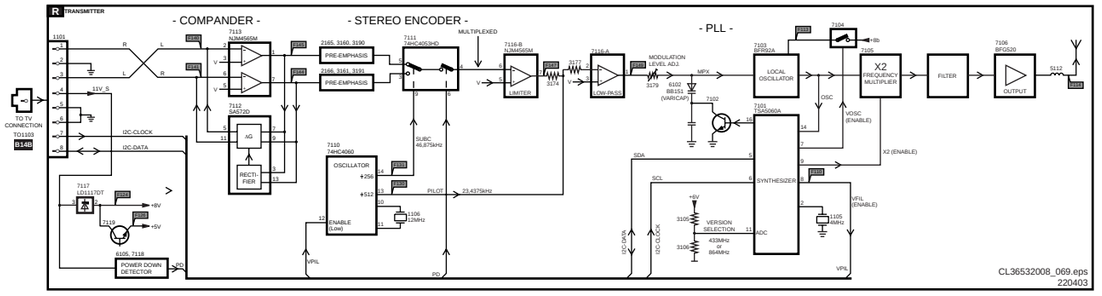


Figure 1-8 Block diagram transmitter

Synthesiser and local oscillator

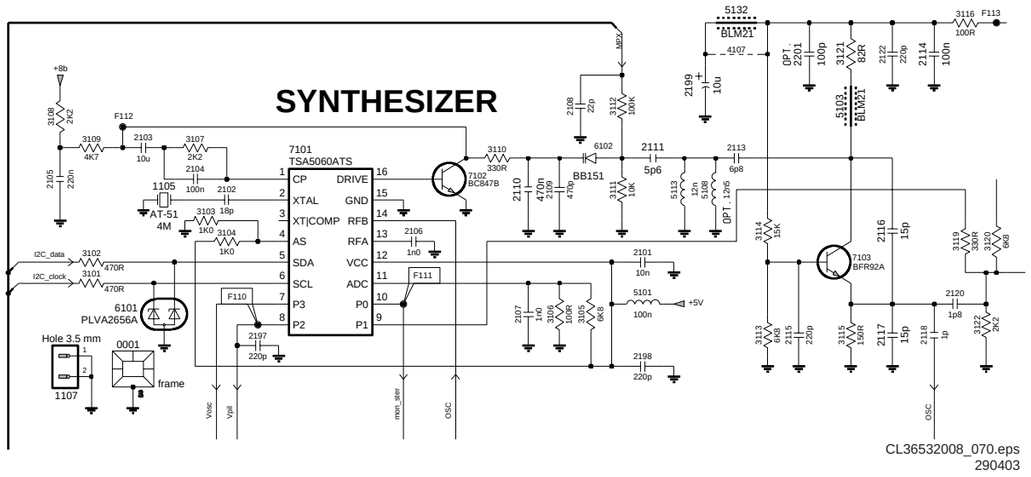


Figure 1-9 Synthesizer part of transmitter circuit diagram

The internal circuitry of the TSA5060A can be seen in below figure

Figure 1-10 Block diagram TSA5060A

The TSA5060A is software controlled by the I2C bus.
TV applications do send commands directly via the TV slow bus while the audio applications have a small interface board with an µP PIC12C508 to send the commands.
To verify whether there is communication between the host device and the TSA 5060A one can check the supply voltage of the osc.transistor 7103 (TP F113) and should be about 7.5 V in normal conditions when the I2C signal is interpreted by the synthesiser. If there is improper communication the voltage remains at zero V.
There is version recognition foreseen to discriminate between 433-864 and 914 MHz units. This feature will automatically load the correct frequency division words into the synthesiser at starting up and initialisation of the host device (e.g. TV set).
The reference quartz is 4 MHz and is divided down to a lower reference frequency of 25 or 50 kHz (depending on the version). The PLL filter is passive and includes 2103 – 2104 – 3107. The transistor 7102 is part of the PLL current source and allows connection to higher supply voltages as +5V.
The TSA5060A has some output ports that are used to:

- Vosc (to switch the LO)
- Vpil (to switch the pilot)
- Port P1 to switch the PA

The oscillator (LO) is a common base transistor (7103) that is oscillating at half the output frequency. The frequency is tuned by the varicap 6102 until the tuning voltage is in the range of the loop filter (between 1 and 6 Vdc). If the voltage is outside this range then possibly the division ratio is chosen outside the normal range or some freq. dependant component around the transistor is faulty.

Multiplier and power amplifier

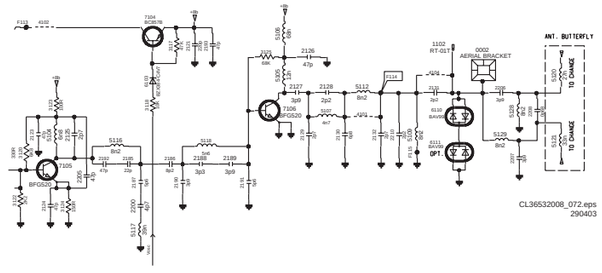


Figure 1-11 Multiplier and power amplifier

The LO signal is multiplied by two in a separate stage 7105 in order to get a high isolation between the LO and the antenna. There is quite some filtering necessary at the output because it is necessary to suppress the half freq, and its harmonics from reaching the PA stage. There is 2 stage bandstop filter followed by an elliptic low pass filter. This filtering has to do with the legal requirements for spurious radiation.
The PA stage with 7106 increases the power level to about +15 dBm at the output of the filter. The transistor is polarised into class A for min. harmonic content and furthermore there is output filtering available to further reduce the harmonics. The configuration differs with the freq. version.

The 864 and 914 MHz versions for TV sets are using an integrated antenna on the board while the 433 TV version and all AV versions use a telescopic antenna. This results in different matching networks between TX and antenna. The printed dipole is driven symmetrically by a balun for optimum power transfer and symmetry. There are protection diodes (6110 & 6111) foreseen but not stuffed for ESD when applying to an external antenna.

The audio compander circuit
The audio compander uses a SA572 (7112), which is intended for high-end applications. It is to be used together with a low noise opamp (7113). There is no audio input filtering ahead of the compander. Therefore it can only be used when the source is having no frequency components above 20 kHz otherwise the compander linearity will be at risk. In the TV applications this is realised with a digital filter at the MDM board while for the AV applications there is additional low pass filtering to ensure good operation.

Graphically the operation of a companding expanding system can be understood from following figure:

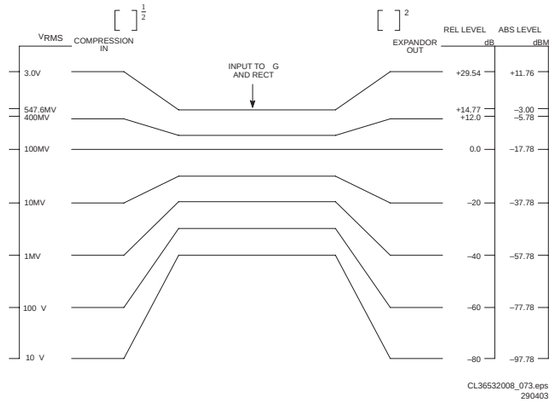


Figure 1-12 Compander graphics

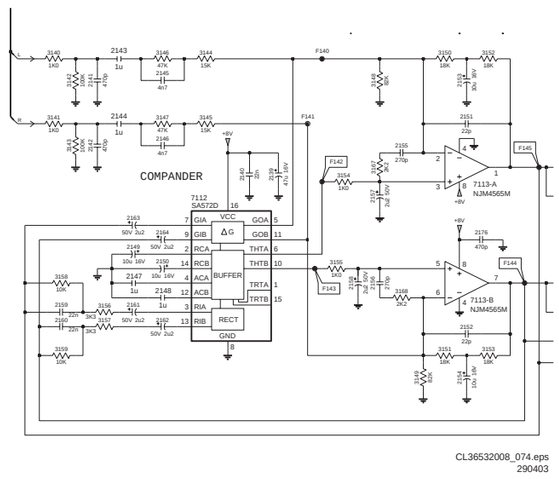


Figure 1-13 Compander circuit

Basically the circuit comes down to following simple circuit:

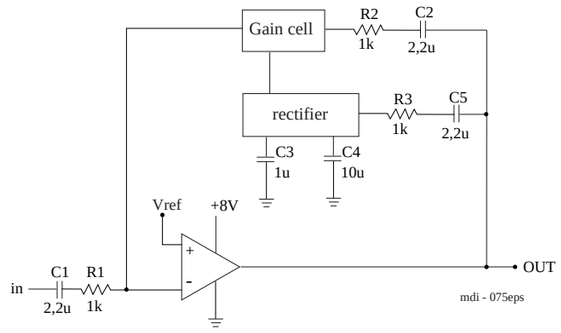


Figure 1-14 Gain cell

The basic compander configuration is given above. From the diagram one can understand the factor of 2 of companding as follows:
There is a variable gain cell (variable resistor) in the feedback loop of an opamp (NJM4565M). There is a rectifier cell that detects the output voltage of the opamp and translates it into a current send to the gain cell .The rectifier has an attack time constant (C3) and a decay time constant (C4), which is optimised to give the best auditive result.
If the input Vin rises with e.g. 4 times then the output can rise only 2 times. This is because the feedback resistor formed by the gain cell is decreased with a factor of 2.
Remember for an opamp Vout = Vin* ((Rf+R1)/R1) where R1 is constant. (Rf= R2+ internal gain cell res.)

The preemphasis, stereo coding and output filtering

The 2 channels available from the compander are now having pre-emphasis with a time constant of 12 uS. Too much time constant would give problems with the voltage rising too high at maximum Modulation frequency and hence occupied band width of the modulated signal. The pre-emphasis consist of a simple RC circuit. The stereocoder 7111C is in fact just an electronic switch, which is driven from the subcarrier frequency. By this operation the spectrum at the output of the switch is as follows in the frequency domain:

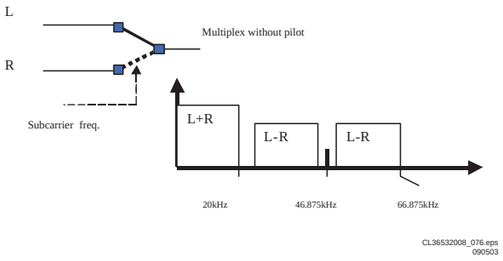


Figure 1-15 Multiplex without pilot

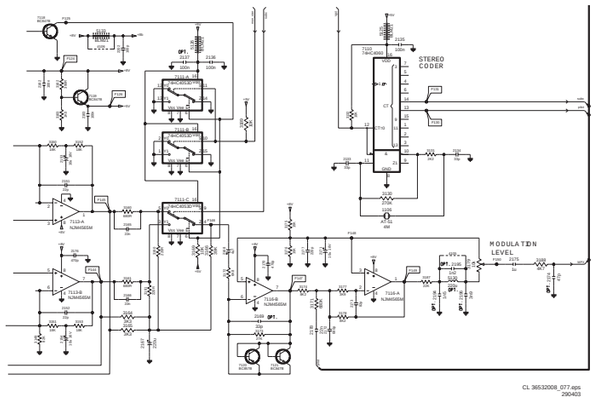


Figure 1-16 Stereocoder

Note that the other 2 switches of 7111 (respectively 7111A and 7111B) are unused.

Power supply and power down
The board is having a low drop voltage regulator 7117, which has an output voltage of 8.3Vdc. The 5 V supply is extracted via transistor 7119.

Receiver
The blockdiagram of the receiver is as follows:

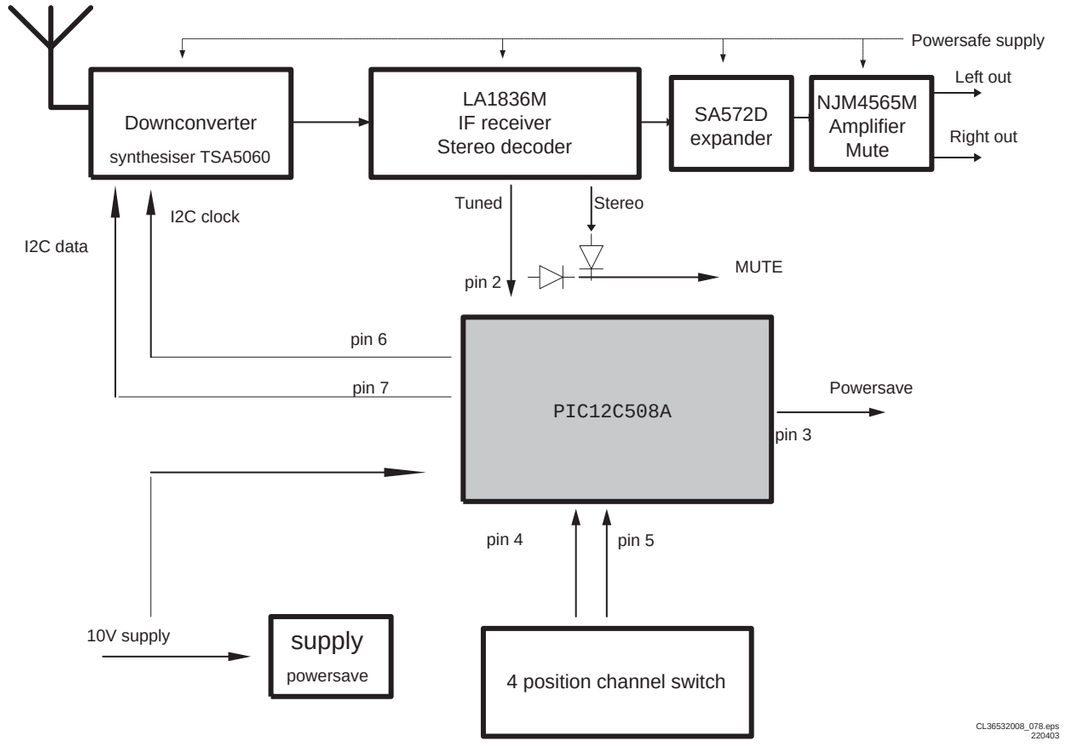


Figure 1-17 Block diagram receiver

The power down detection is done via 6105 and 7118. When the voltage drops the transistor 7118 comes out of saturation rapidly thereby putting the stereocoder in Hi-Z position (idle) and no AF output will be there from the stereocoder.
Suitable timing signals for the subcarrier and pilot frequency are extracted out of a 12 MHz crystal by division with 256 and 512 respectively. The whole chip 7110 can be enabled / disabled from the synthesiser port P2 (Vpil). (Low = enable).
The outputs are square wave 5 V compatible.
The multiplex output from the stereocoder is fed into a limiter amplifier 7116B that sets a limit to the output voltage. In case the audio input signals increase towards 1 .3 V the signal will be flat-topped and limited symmetrically. This of course introduces distortion but is necessary in order to observe the bandwidth limitations as set by legal standards. The base-emitter junctions of 7120 & 7121 form the limits.
This output signal is then summed with the pilot signal, which is injected just as a plain square wave. The amplifier 7116A forms a second order low pass filter that cuts at about 90 kHz. This reduces the harmonics present in the composite output signal. This signal is actually fed via trimpotmeter 3179 towards the varicap in order to achieve FM modulation. Trimpotentiometer 3179 is aligned for a deviation of 50 kHz. There are 3 ways to align the trimpotmeter:

- Use a FM modulation analyser meter such as FAM (R&S) or similar.
- Put the RF output on a spectrum analyser and connect both audio inputs together at 0.41 V / 400Hz at the inputs of the TX. There are 2 peaks visible on the screen. Align until the difference between the peaks -3 dB is 2* 50kHz or 100 kHz.
- Use an accompanying receiver and while modulating both inputs of the TX align until the measured audio output of the RX is 1.3 Vrms.

Synthesiser and local oscillator

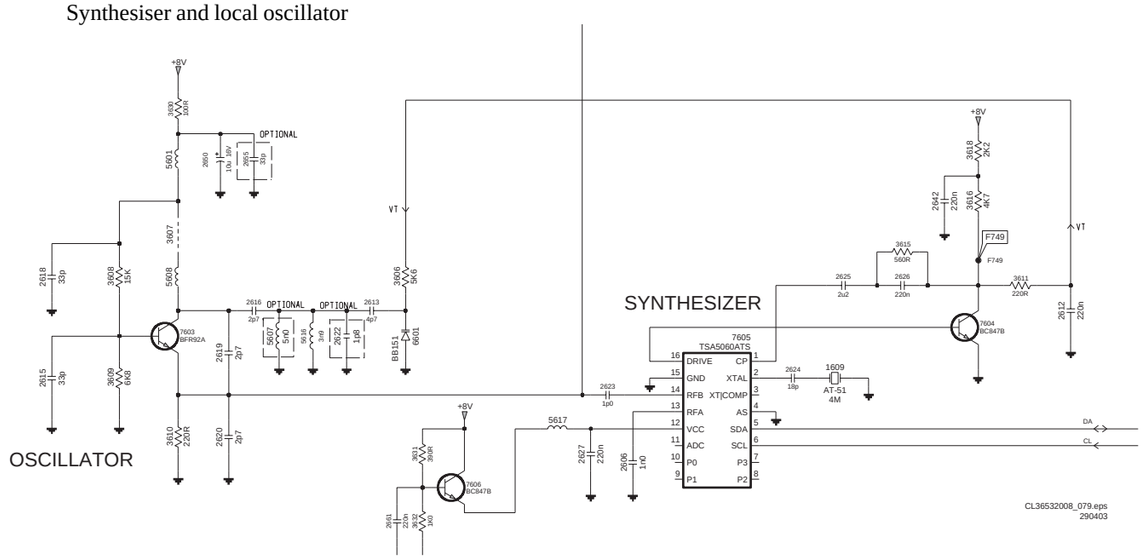


Figure 1-18 Synthesizer circuit

The internal circuitry of the TSA5060A can be seen in below figure.

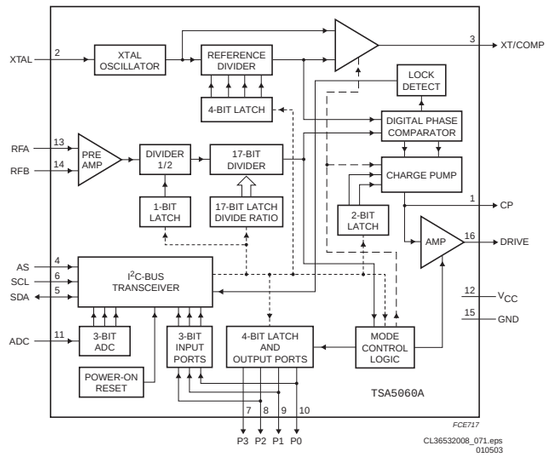


Figure 1-19 Block diagram TSA5060A

The TSA5060A is software controlled via the I2C bus by the PIC12C508 microcontroller.
There is no hardware version recognition foreseen but the version can be read out from the PIC12C508 microcontroller. There is a different software code for 864, 433 and 914 MHz version.
The reference quartz is 4 MHz and is divided down to a lower ref.freq. of 200 KHz or 100KHz (depending on the version). The PLL filter is passive and includes 2625 – 2626 – 3615-3611-2612. The transistor 7604 is part of the PLL current source and allows connection to higher supply voltages as +5V.
The oscillator (LO) is a common base transistor (7603) that is oscillating at the fundamental frequency. The frequency is tuned by the varicap 6601 until the tuning voltage is in the range of the loop filter (between 0.5 and 7 Vdc).
If the voltage is outside this range then possibly the division ratio is chosen outside the normal range or some freq. dependant component around the transistor is faulty.

Antenna input

The antenna input is tuned for a 17 cm telescopic antenna. The input is ESD protected by diode 6602. The SAW filter 1602 protects the receiver for out of band interference.

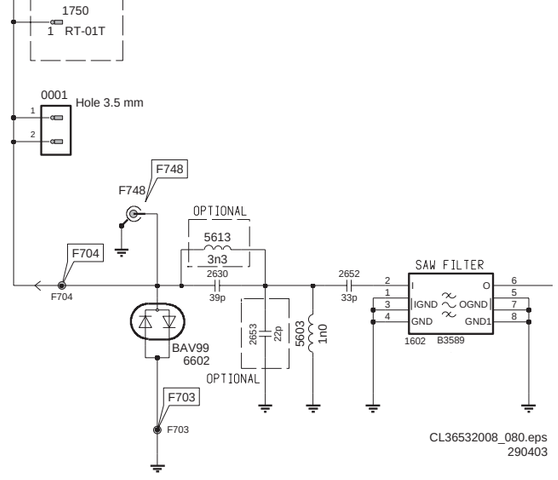


Figure 1-20 Antenna circuit

LNA and mixer

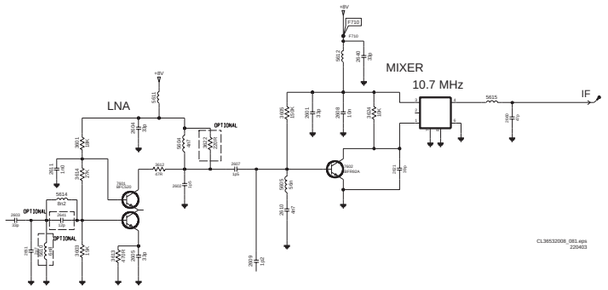


Figure 1-21 Mixer circuit

The LNA is a cascode configuration around the 7601. This circuit provides gain with a low noise figure while providing isolation from the oscillator to antenna. This isolation is necessary to comply with the legal requirements for radiated interference. The output of the LNA and the LO signal is mixed in 7602. This is a one transistor mixer that provides high conversion gain with low LO input signal. This level is only around 20 mV. The reason for this high conversion gain is that there is a 10.7 MHz trap at the base, 5605-2610.
The output of the mixer is a tuned circuit at 10.7 MHz. The coil is pre-aligned at the factory.

The FM IF radio circuit

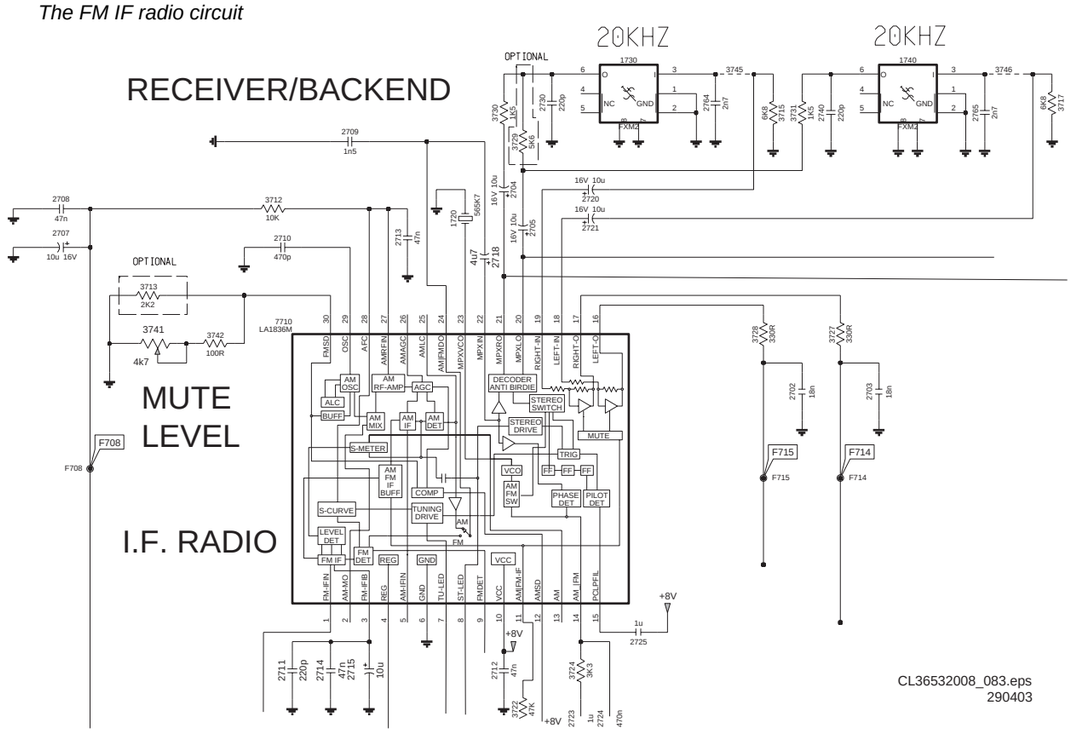


Figure 1-23 Receiver / backend circuit

FM Detector
The IF signal is demodulated in the 7710, LA1836M the IF radio IC. This IC has a coil FM detector that is aligned. In the alignment instructions this adjustment has been given. The stereodecoder is integrated and needs no adjustment. The demodulated signal is filtered with 1730-1740. These filters are pre-aligned and are reducing the pilot- and subcarrier frequency. This is necessary to prevent wrong operation of the expander circuit.

IF amplifier

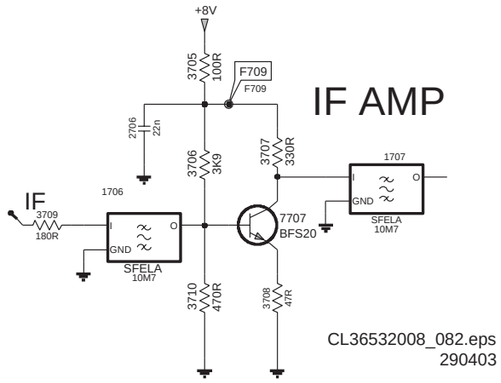


Figure 1-22 IF amp circuit

The mixer output signal is filtered by two ceramic IF filters. An IF amplifier 7707 is reducing the loss introduced by these filters.

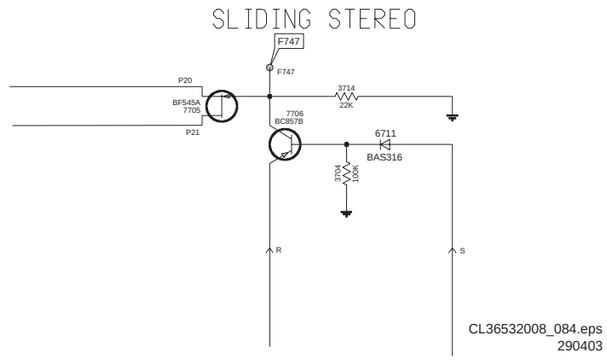


Figure 1-24 Receiver / backend circuit

There is a sliding stereo circuit for reducing the stereo noise at low signal fieldstrengths. 7705 is short circuiting Audio left and Audio Right at low fieldstrengths. The level where the crossover happens is aligned. In the alignment instructions this adjustment has been given.
There is also a MUTE LEVEL alignment, which is set at 10 µV RF input level. At this signal level the wireless audio link is muted.

The audio expander circuit

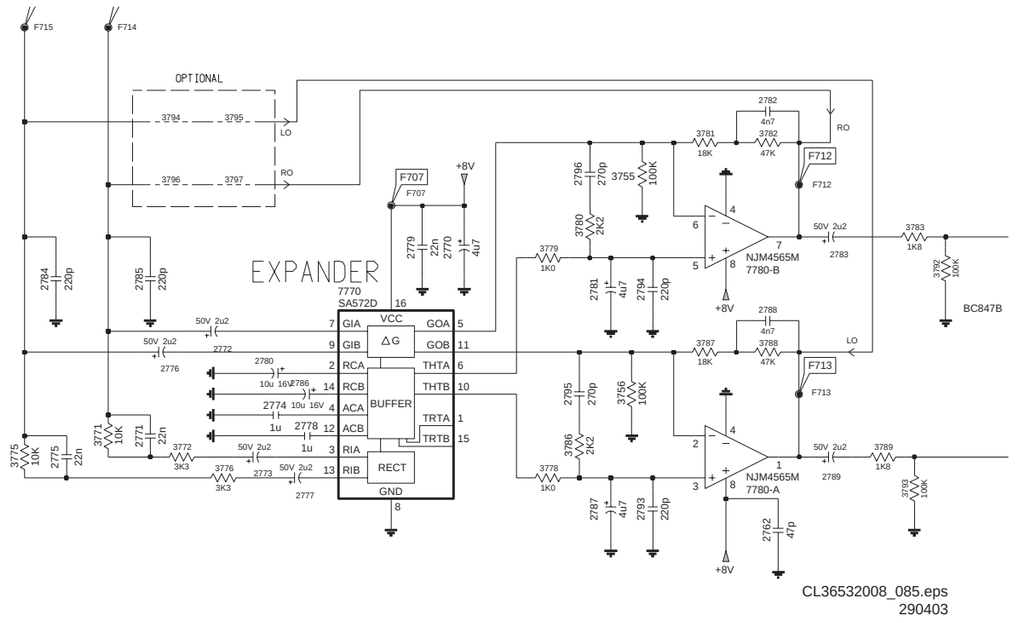


Figure 1-25 Expander circuit

The audio compander uses a device from SA572 (7770) that is intended for high-end applications. It is to be used together with a low noise opamp (7780).
There is an expanding factor of 2 in dB. There is a variable gain cell (variable resistor) in the negative input of the opamp (NJM4565M). There is a rectifier cell that detects the input voltage and translates into a current send to the gain cell .The rectifier has an attack time constant and a decay timeconstant, which is optimised to give the best auditive result.
If the input Vin rises with e.g. 2 times then the output rise 4 times. This is because the negative input resistor formed by the gain cell is decreased with a factor of 2.
Remember for an opamp Vout = Vin* ((Rf+Rin)/Rin) where Rf is constant . (Rin= internal gain cell resistor)

Microcontroller functions
The microcontroller is an OTP Microchip PIC12C508A type with 512-bit EPROM and 6 I/O lines. The controller has to be programmed on the production line according the required version of 864, 914 MHz and 433 MHz.
The main functions of the uP are reading the setting of the 4 position slide switch within every 250 milliseconds and read the Tuned info continuously and start the powersave mode if necessary.

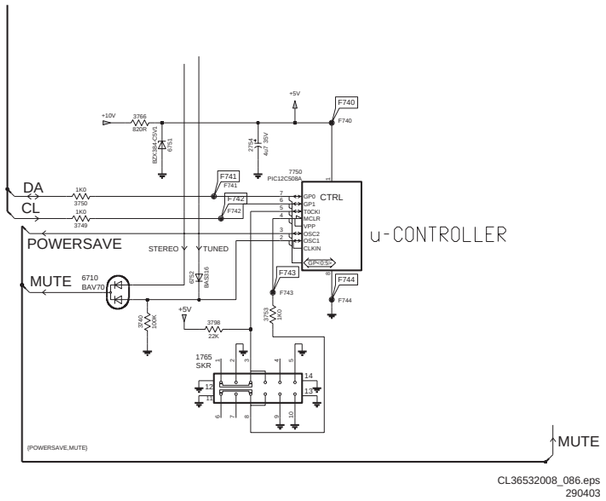


Figure 1-26 Microcontroller functions

Frequency setting

Frequency setting is necessary when the 4-position slide switch is changed. In an internal look-up table the 4 required frequencies for the local oscillator are stored. The output towards the synthesiser chip in the frontend is in I²C form. The synthesizer is the only device on the bus. During frequency setting the Mute is active.
Scanning of the channel switch should occur within every 250 milliseconds in any mode.

The AV-version of RX Amplifier board

General:
The amplifier module is intended to deliver 2 x 50 Watts into 8 ohm speakers. Speakers are connected through “easy-fit” connectors. See amplifier blockdiagram.

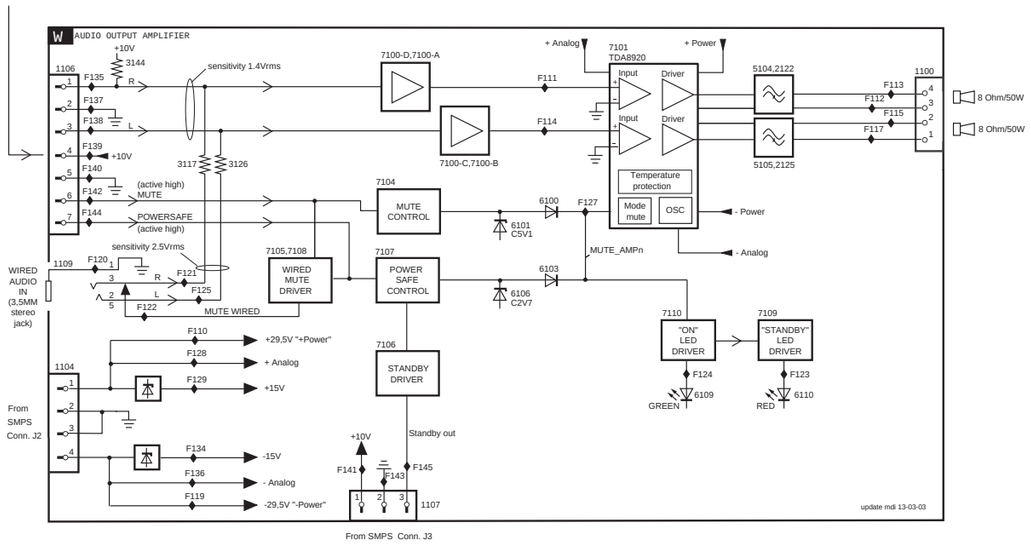


Figure 1-27 Block diagram amplifier

The crossover of the built-in high pass – filter will be around 30Hz. This eliminates sub-bass info going to the surround speakers.
The amplifier uses “class D” amplifier-chip TDA8920.

Additionally, the module is featured with a 2-colour indicator, green indicates the active state while red is standby.
There is also an on-board 10 Vdc supply conditioning, specially intended for the TX receiver.

11-25

In normal mode when Tuned is going “High” the channel data should be transmitted to the synthesizer to protect the receiver in case of hang-up situations.

Muting
The mute of the receiver is controlled by the IF receiver part but can be overiden by the microcontroller.
The mute action initiated by the microcontroller is necessary during channel switching and in the standby mode. Muting has priority on all other main tasks. The hardware Mute is the result of an AND function between the “Tuned” and “Stereo” information. The Tuned information can be read by the microcontroller (pin 2). The same pin (pin 2) has to be put in output mode to activate the microcontroller initiated Mute. This Mute must be used during the frequency setting and during the standby mode.

Powersave mode
The main supply can be switched off with the “powersave” control line to reduce the current consumption. The microcontroller is always powered by the power supply. All other electronics can be put into powersave mode.
After approx. 10 minutes of no “Tuned” signal the receiver goes into powersave mode. Once in powersave mode, the receiver is operated in “listen-sleep” mode to reduce the average current consumption.

Power supply
The board is having a low drop voltage regulator 7790, which has an output voltage of 8 Vdc.
The 5 V supply for the micro controller is extracted from the 10 Vdc input supply via a zenerdiode 6751. The 5 Vdc supply of the synthesizer is extracted from transistor 7606. The powersave signal is also provided to the connector for the amplifier and for AV via the amplifierboard the SMPS is controlled.

DC-references and supply:
+/- 15 Vdc preamp supply: The supply for the preamp is made by using a derived +/-15 Vdc from main power supply +/- 29.5 Vdc. Doing so assures a good symmetrical start-up on the power lines of the preamp, this suppresses possible plops.This supply is 15V for all operating conditions, except power save standby.

Mute circuitry:
In normal operating circumstances, the voltage on the- “mode” pin of the amplifier IC7101 will be 4V5. This is the MUTE_AMPn signal.

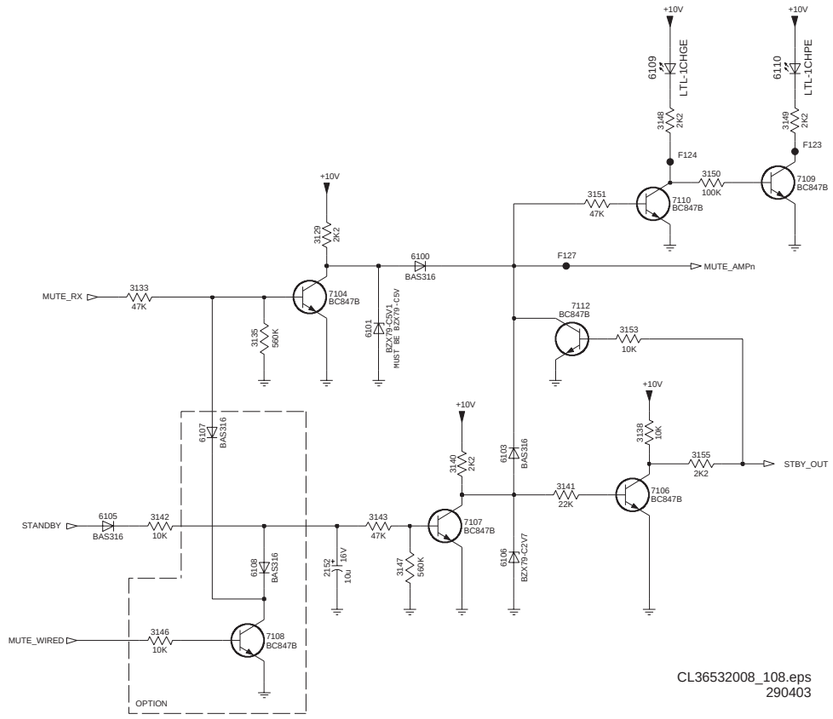


Figure 1-28 Mute ampn circuit

This signal is coming from zener 6101 via diode 6100. Transistor 7104 and 7107 are not saturated at that moment. When the receiver generates a ”mute” (MUTE_RX = 4Vdc on pin 6 of connector 1106) then 7104 saturates, diode 6100 blocks and the level on pin 6 -of IC 7101 becomes 2V1. The signal is now formed by zener 6106 via diode 6103. All DC references stay as they were; the class D keeps on oscillating, the led stays green but no sound is produced on the outputs. The control line STBY_OUT (connector 1107-pin 3) to the power supply stays low.

When the receiver goes into powersavemode (= after 10 minutes no signal from the AV set), STANDBY signal is high; then the circuitry around 7107 pulls down the mode line of the amplifier to nearly 0V via the MUTE_AMPn signal. (Note that the mute line from the receiver is also high under this condition).
The amplifier is completely in standby mode, the oscillator in amplifier IC 7101 stops and all internal references are disabled. The led red will be on, while green is off. At the same moment transistor 7106 is not saturated anymore and the control line towards the switched mode power-supply becomes high. This switches off the main +/- 29.5Vdc supply and the whole unit comes in a real power save mode. 7112 helps to pull down the mute line of the amplifier-chip 7101 as fast as possible to avoid plops at this transition.

When the receiver detects a valid signal from the AV set, this power-save-line becomes continuously low, and after a small time (2152, 3143, 3147), 7104 is off. At the same moment the mute line becomes low and the amplifier is enabled again. Also the control line (connector 1107-pin 3) to the power supply becomes low, thus starting up the main +/- 29.5 Vdc supply

Amplifier
The amplifier TDA8920TH operates on +/-29.5 Vdc and can deliver 2 x 50 Watts into 8 ohm loads. Using the very efficient class D - technology, it minimizes the dissipation. The class - D chip runs on a ± 300kHz oscillator, therefore a 12dB / octave output filter is needed (coil 5104 and 5105, and capacitor 2122 and 2125).
Input signals are 180° phase shifted by 7100-C and 7100-D, (the effect - speakers have to be in phase with left and right main speakers, otherwise bass reproduction will be poor) Input signals are filtered in the two-section high pass filter around 7100-B and 7100-A. The – 3 dB point is somewhere around 30Hz.
Input sensitivity of the amplifier for maximum output: typical 1.4V rms

+/- 29.5 Vdc main supply: Will be switched off when the unit goes into power save-mode. See circuitry around 7107 and 7106.
+ 10Vdc receiver supply: Is always present, receiver stays always active
Note that all supplies have the same ground reference.

11.9 Spare Parts List

Mechanical Parts List

Various

0074		Screw M3 x 6
0078	4304 074 19580	FEET
0320		TRANSMITTER BOARD
0338	4304 074 19480	TOP COVER for RECEIVER
0338	4304 074 19520	TOP COVER TRANSMITTER
0339	4304 074 19470	BOTTOM COVER for RECEIVER
0339	4304 074 19530	BOTTOM COVER for TRANSMITTER
0340	4304 074 19560	LIGHT GUIDE TRANSMITTER
0340	4304 074 19570	LIGHT GUIDE RECEIVER
0366	3104 210 21710	ANTENNA
0370	4304 074 19510	DECORATIVE RING IN TOPCOVER
0438		RECEIVER BOARD
0440		AMPLIFIER
1501	4304 078 90120	POWER SUPPLY USA
1501	4304 078 90100	POWER SUPPLY EUR
1501	4304 078 90110	POWER SUPPLY UK
7002		INTERFACE BOARD TRANSMITTER
7003	4304 078 90130	SMPS board for amplifier
8001	4304 078 89080	CABLE ASSY POWER UK
8001	4304 078 90200	CABLE ASSY POWER USA
8001TX	4304 078 90060	CABLE ASSY LS INPUT INTERFACE

Interface Parts

Various

1100	4822 264 30175	Connector DC-Supply
1110	4822 267 10565	Connector 4p
1120	4822 267 10574	Connector 8p
1130	2422 127 00552	Switch slide 4 positions

Capacitors

2100	2238 586 59812	100nF 20-80% 50V 0603
2101	2238 586 59812	100nF 20-80% 50V 0603
2102	4822 124 12095	100µF 20% 16V
2103	2238 586 59812	100nF 20-80% 50V 0603
2104	2238 586 59812	100nF 20-80% 50V 0603
2111	4822 124 12084	1µF 20% 50V SMD
2112	4822 124 12084	1µF 20% 50V SMD
2113	4822 122 33752	15pF 5% 50V
2114	4822 122 33752	15pF 5% 50V
2115	4822 126 13879	220nF 20% 16V
2116	5322 124 41945	22µF 20% 35V SMD
2117	4822 126 11785	47pF 5% 50V 0603
2118	4822 126 11785	47pF 5% 50V 0603
2125	4822 126 13879	220nF 20% 16V
2130	2238 916 15641	22nF 10% 25V 0603
2131	4822 126 13883	220pF 5% 50V
2132	4822 126 13193	4.7nF 10% 63V
2133	4822 126 13879	220nF 20% 16V
2134	4822 126 11785	47pF 5% 50V 0603
2135	4822 126 13879	220nF 20% 16V
2136	4822 126 13879	220nF 20% 16V
2137	2238 916 15641	22nF 10% 25V 0603
2145	2238 586 59812	100nF 20-80% 50V 0603
2147	2020 552 94427	100pF 5% 50v 0603
2148	2020 552 94427	100pF 5% 50v 0603
2149	2020 552 94427	100pF 5% 50v 0603
2150	4822 122 33752	15pF 5% 50V
2151	4822 122 33752	15pF 5% 50V

Resistor

3109	4822 051 30102	1k 5% 0.062W
3110	4822 051 30102	1k 5% 0.062W
3111	4822 117 13632	100k 1% 0603 0.62W
3112	4822 117 12864	82k 5% 0.6W
3113	4822 051 30223	22k 5% 0.062W
3114	4822 051 30223	22k 5% 0.062W
3115	4822 117 12864	82k 5% 0.6W
3116	4822 117 12864	82k 5% 0.6W
3117	4822 051 30223	22k 5% 0.062W
3118	4822 051 30223	22k 5% 0.062W
3119	4822 051 30222	2.2k 5% 0.062W
3120	4822 051 30222	2.2k 5% 0.062W
3121	4822 051 30472	4.7k 5% 0.062W
3122	4822 051 30472	4.7k 5% 0.062W
3125	4822 051 30273	27k 5% 0.062W
3126	4822 051 30273	27k 5% 0.062W
3130	4822 051 30103	10k 5% 0.062W
3131	4822 051 30472	4.7k 5% 0.062W
3132	4822 051 30472	4.7k 5% 0.062W
3133	4822 051 30222	2.2k 5% 0.062W
3134	4822 051 30102	1k 5% 0.062W
3135	4822 051 30474	470k 5% 0.062W
3136	4822 051 30393	39k 5% 0.062W
3137	4822 051 30471	470 5% 0.062W
3138	4822 051 30103	10k 5% 0.062W
3139	4822 117 13632	100k 1% 0603 0.62W
3140	4822 117 13632	100k 1% 0603 0.62W
3141	4822 051 30102	1k 5% 0.062W
3142	4822 051 30331	330 5% 0.062W
3143	4822 051 30333	33k 5% 0.062W
3144	4822 051 30223	22k 5% 0.062W
3145	4822 051 30223	22k 5% 0.062W
3148	2322 702 60564	560k 5% 0603
3152	4822 117 12967	390k 5% 0,62W
3154	4822 051 30008	Jumper 0603
3155	4822 051 30008	Jumper 0603
4125	4822 051 20008	Jumper 0805
4127	4822 051 20008	Jumper 0805

Diodes

6130	9340 255 30135	BAS216
6142	4822 130 82262	BAT54S
6144	4822 130 82262	BAT54S

Transistors & IC's

7101	4822 209 83357	NJM4560M
7115	4822 209 83357	NJM4560M
7130	4822 130 60373	BC856B
7135	5322 130 60159	BC846B
7140	5322 130 60159	BC846B

Transmitter Parts Eur + UK

Various

1101	4822 267 10574	Connector 8p
1106	4822 242 10694	Resonator 12MHz

Capacitors

2101	5322 126 11583	10nF 10% 50V 0603
2102	4822 126 14507	18pF 5% 50V 0603
2103	2020 552 96675	10µF 10% 16V 1210
2104	4822 126 14585	100nF 10% 50V
2105	4822 126 13879	220nF 20% 16V
2106	3198 016 31020	1nF 25V 0603
2107	3198 016 31020	1nF 25V 0603
2108	4822 122 33761	22pF 5% 50V
2109	4822 126 13881	470pF 5% 50V
2110	2020 552 96684	470nF 10% 25V
2111	2020 552 96384	5.6pF 25% 50V 0603
2113	4822 126 13956	68pF 5% 63V 0603
2114	2238 586 59812	100nF 20-80% 50V 0603
2115	4822 126 13883	220pF 5% 50V
2116	4822 122 33752	15pF 5% 50V
2117	4822 122 33752	15pF 5% 50V
2118	3198 016 31080	1pF 25% 50V 0603
2121	4822 126 13883	220pF 5% 50V
2122	4822 126 13883	220pF 5% 50V
2123	4822 126 11785	47pF 5% 50V 0603
2124	4822 126 11785	47pF 5% 50V 0603
2126	4822 126 11785	47pF 5% 50V 0603
2129	3198 016 32780	2.7pF 50V 0603 NP0
2131	2222 867 15339	33pF 5% 50V 0603
2132	3198 016 32780	2.7pF 50V 0603 NP0
2133	2222 867 15339	33pF 5% 50V 0603
2134	2222 867 15339	33pF 5% 50V 0603
2135	2238 586 59812	100nF 20-80% 50V 0603
2136	2238 586 59812	100nF 20-80% 50V 0603
2139	4822 124 80151	47µF 20% 16V
2140	2238 916 15641	22nF 10% 25V 0603
2141	4822 126 13881	470pF 5% 50V
2142	4822 126 13881	470pF 5% 50V
2143	4822 126 14472	1µF 10% 10V 0805
2144	4822 126 14472	1µF 10% 10V 0805
2145	4822 126 13193	4.7nF 10% 63V
2146	4822 126 13193	4.7nF 10% 63V
2147	4822 126 14472	1µF 10% 10V 0805
2148	4822 126 14472	1µF 10% 10V 0805
2149	4822 124 23002	10µF 20% 16V
2150	4822 124 23002	10µF 20% 16V
2151	4822 122 33761	22pF 5% 50V
2152	4822 122 33761	22pF 5% 50V
2153	4822 124 23002	10µF 20% 16V
2154	4822 124 23002	10µF 20% 16V
2155	4822 126 14506	270pF 5% 50V 0603
2156	4822 126 14506	270pF 5% 50V 0603
2157	3198 030 82280	2.2µF 20% 50V
2158	3198 030 82280	2.2µF 20% 50V
2159	2238 916 15641	22nF 10% 25V 0603
2160	2238 916 15641	22nF 10% 25V 0603
2161	3198 030 82280	2.2µF 20% 50V
2162	3198 030 82280	2.2µF 20% 50V
2163	3198 030 82280	2.2µF 20% 50V
2164	3198 030 82280	2.2µF 20% 50V
2165	2238 916 15641	22nF 10% 25V 0603
2166	2238 916 15641	22nF 10% 25V 0603
2167	4822 124 81059	220µF 20% 4V
2168	2020 021 91729	4.7µF 20% 35V
2170	4822 126 13881	470pF 5% 50V
2171	4822 124 23002	10µF 20% 16V
2172	4822 126 13909	680pF 10% 50V 0603
2173	4822 126 14226	82pF 5% 50V 0603
2175	4822 126 14472	1µF 10% 10V 0805
2176	4822 126 13881	470pF 5% 50V
2177	4822 126 13883	220pF 5% 50V
2178	2238 916 15641	22nF 10% 25V 0603
2179	2238 586 59812	100nF 20-80% 50V 0603
2181	2238 916 15641	22nF 10% 25V 0603
2182	2238 586 59812	100nF 20-80% 50V 0603
2183	2238 586 59812	100nF 20-80% 50V 0603
2184	4822 126 13883	220pF 5% 50V
2185	4822 122 33761	22pF 5% 50V
2188	3198 016 33380	3.3pF 50V 0603
2192	4822 126 11785	47pF 5% 50V 0603
2193	4822 126 11785	47pF 5% 50V 0603
2197	4822 126 13883	220pF 5% 50V
2198	4822 126 13883	220pF 5% 50V
2199	4822 124 23002	10µF 20% 16V
2200	4822 126 13887	4.7pF 50V
2201	2020 552 94427	100pF 5% 50v 0603
2202	2020 552 94427	100pF 5% 50v 0603
2205	4822 126 11785	47pF 5% 50V 0603

Resistors

3101	4822 051 30471	470 5% 0.062W
3102	4822 051 30471	470 5% 0.062W
3103	4822 051 30102	1k 5% 0.062W
3104	4822 051 30102	1k 5% 0.062W
3106	4822 051 30101	100 5% 0.062W
3107	4822 051 30222	2.2k 5% 0.062W
3108	4822 051 30222	2.2k 5% 0.062W
3109	4822 051 30472	4.7k 5% 0.062W
3110	4822 051 30331	330 5% 0.062W
3111	4822 051 30103	10k 5% 0.062W
3112	4822 117 13632	100k 1% 0603 0.62W
3113	4822 051 30682	6.8k 5% 0.062W
3114	4822 051 30153	15k 5% 0.062W
3115	4822 051 30151	150 5% 0.062W
3116	4822 051 30101	100 5% 0.062W
3117	4822 117 12925	47k 1% 0.063W 0603
3118	4822 051 30103	10k 5% 0.062W
3119	4822 051 30331	330 5% 0.062W
3120	4822 051 30682	6.8k 5% 0.062W
3121	4822 117 13501	82 5% 0.62W 0603
3122	4822 051 30222	2.2k 5% 0.062W
3123	4822 051 30101	100 5% 0.062W
3124	4822 051 30151	150 5% 0.062W
3125	4822 051 30563	56k 5% 0.062W
3127	4822 051 30689	68 5% 0.063W 0603
3130	4822 117 12889	270k 1% 0.063W 0603
3131	4822 051 30222	2.2k 5% 0.062W
3132	4822 051 30103	10k 5% 0.062W
3133	4822 051 30154	150k 5% 0.062W
3140	4822 051 30102	1k 5% 0.062W
3141	4822 051 30102	1k 5% 0.062W
3142	4822 117 13632	100k 1% 0603 0.62W
3143	4822 117 13632	100k 1% 0603 0.62W
3144	4822 051 30153	15k 5% 0.062W
3145	4822 051 30153	15k 5% 0.062W
3146	4822 117 12925	47k 1% 0.063W 0603
3147	4822 117 12925	47k 1% 0.063W 0603

3150	4822 051 30183	18k 5% 0.062W
3151	4822 051 30183	18k 5% 0.062W
3152	4822 051 30183	18k 5% 0.062W
3153	4822 051 30183	18k 5% 0.062W
3154	4822 051 30102	1k 5% 0.062W
3155	4822 051 30102	1k 5% 0.062W
3156	4822 051 30332	3.3k 5% 0.062W
3157	4822 051 30332	3.3k 5% 0.062W
3158	4822 051 30103	10k 5% 0.062W
3159	4822 051 30103	10k 5% 0.062W
3160	4822 051 30681	680 5% 0.062W
3161	4822 051 30681	680 5% 0.062W
3164	4822 051 30332	3.3k 5% 0.062W
3165	4822 051 30332	3.3k 5% 0.062W
3166	4822 051 30393	39k 5% 0.062W
3167	4822 051 30222	2.2k 5% 0.062W
3168	4822 051 30222	2.2k 5% 0.062W
3169	4822 051 30103	10k 5% 0.062W
3171	4822 051 30684	680k 5% 0.062W
3172	4822 051 30682	6.8k 5% 0.062W
3173	4822 051 30273	27k 5% 0.062W
3174	4822 117 12902	8.2k 1% 0.063W 0603
3175	4822 051 30153	15k 5% 0.062W
3176	4822 051 30153	15k 5% 0.062W
3177	4822 051 30392	3.9k 5% 0.063W 0603
3178	4822 117 12902	8.2k 1% 0.063W 0603
3179	4822 100 12157	Potm 10K 30%
3180	4822 051 30472	4.7k 5% 0.062W
3181	4822 117 12925	47k 1% 0.063W 0603
3182	4822 051 30391	390 5% 0.062W
3185	4822 051 30121	120 5% 0.062W
3186	4822 051 30681	680 5% 0.062W
3187	4822 051 30223	22k 5% 0.062W
3188	4822 051 30472	4.7k 5% 0.062W
3189	4822 051 30103	10k 5% 0.062W
3190	4822 051 30221	220 5% 0.062W
3191	4822 051 30221	220 5% 0.062W
4102	4822 051 30008	Jumper 0603
4105	4822 051 30008	Jumper 0603
4106	4822 051 20008	Jumper 0805
4107	4822 051 20008	Jumper 0805
4108	4822 051 30008	Jumper 0603

Filters

5103	4822 157 71206	Bead 600 at 100MHz
5125	4822 157 71206	Bead 600 at 100MHz
5126	4822 157 71206	Bead 600 at 100MHz
5127	4822 157 71206	Bead 600 at 100MHz

Diodes

6101	4822 130 11423	PLVA2656A
6103	4822 130 11148	UDZ4.7B
6105	4822 130 11551	UDZS10B
6106	4822 130 11397	BAS316
6107	3198 020 55680	BZX384-C5V6
6108	5322 130 34331	BAV70

Transistors & IC's

7102	5322 130 60159	BC846B
7103	5322 130 60647	BFR92A SM
7104	4822 130 60373	BC856B
7110	5322 209 71591	PC74HC4060T
7111	4822 209 60792	74HC4053D
7117	9322 144 97668	LD1117DT
7118	5322 130 60159	BC846B
7119	5322 130 60159	BC846B
7120	4822 130 60373	BC856B
7121	5322 130 60159	BC846B

Receiver Parts Eur + UK

Various

1602	2422 549 45394	SAW 864MHz B3589
1706	4822 242 70665	Filter 10.7M
1707	4822 242 70665	Filter 10.7M
1710	2422 549 43868	Coil var. 10.7MHz
1720	2422 540 98572	Resonator 565kHz CSBLA562
1730	2422 549 45464	Filter 20KHz
1740	2422 549 45464	Filter 20KHz
1765	2422 127 00552	Switch slide 4 positions
1790	4822 267 10618	Connector 7p

Capacitors

2601	2222 867 15339	33pF 5% 50V 0603
2602	3198 016 31580	1.5pF 50V 0603
2603	2222 867 15339	33pF 5% 50V 0603
2604	2222 867 15339	33pF 5% 50V 0603
2605	2222 867 15339	33pF 5% 50V 0603
2606	5322 126 11578	1nF 10% 50V 0603
2607	3198 016 31580	1.5pF 50V 0603
2608	5322 126 11583	10nF 10% 50V 0603
2609	3198 016 31280	1.2pF 50V 0603
2610	4822 126 13193	4.7nF 10% 63V
2611	5322 126 11578	1nF 10% 50V 0603
2612	4822 126 13879	220nF 20% 16V
2613	4822 126 13887	4.7pF 50V
2615	2222 867 15339	33pF 5% 50V 0603
2616	3198 016 32780	2.7pF 50V 0603 NP0
2618	2222 867 15339	33pF 5% 50V 0603
2619	3198 016 32780	2.7pF 50V 0603 NP0
2620	3198 016 32780	2.7pF 50V 0603 NP0
2621	2020 552 93645	39pF 5% 50V
2623	3198 016 31080	1pF 25% 50V 0603
2624	4822 126 14507	18pF 5% 50V 0603
2626	4822 126 13879	220nF 20% 16V
2627	4822 126 13879	220nF 20% 16V
2630	2020 552 93645	39pF 5% 50V
2640	2222 867 15339	33pF 5% 50V 0603
2642	4822 126 13879	220nF 20% 16V
2650	4822 124 23002	10µF 20% 16V
2651	3198 016 32780	2.7pF 50V 0603 NP0
2652	2222 867 15339	33pF 5% 50V 0603
2660	4822 126 11785	47pF 5% 50V 0603
2661	4822 126 13879	220nF 20% 16V
2704	4822 124 23002	10µF 20% 16V
2705	4822 124 23002	10µF 20% 16V
2706	2238 916 15641	22nF 10% 25V 0603
2707	4822 124 23002	10µF 20% 16V
2708	3198 017 34730	47nF 16V 0603
2709	4822 126 14247	1.5nF 50V 0603
2710	4822 126 13881	470pF 5% 50V
2711	4822 126 13883	220pF 5% 50V
2712	3198 017 34730	47nF 16V 0603
2713	3198 017 34730	47nF 16V 0603
2714	3198 017 34730	47nF 16V 0603
2715	4822 124 23002	10µF 20% 16V
2716	2020 552 94427	100pF 5% 50v 0603
2718	2020 021 91729	4.7µF 20% 35V
2720	4822 124 23002	10µF 20% 16V
2721	4822 124 23002	10µF 20% 16V
2722	4822 124 23002	10µF 20% 16V
2723	4822 126 14472	1µF 10% 10V 0805
2724	4822 126 14583	470nF 10% 16V 0805
2725	4822 126 14472	1µF 10% 10V 0805
2730	4822 126 13883	220pF 5% 50V
2740	4822 126 13883	220pF 5% 50V
2750	2020 552 94427	100pF 5% 50v 0603
2751	4822 126 13881	470pF 5% 50V
2754	2020 021 91729	4.7µF 20% 35V
2755	4822 124 12095	100µF 20% 16V
2762	4822 126 11785	47pF 5% 50V 0603
2764	2238 586 15628	2n7 10% 50V 0603
2765	2238 586 15628	2n7 10% 50V 0603
2770	2020 021 91729	4.7µF 20% 35V
2771	2238 916 15641	22nF 10% 25V 0603
2772	3198 030 82280	2.2µF 20% 50V
2773	3198 030 82280	2.2µF 20% 50V
2774	4822 126 14472	1µF 10% 10V 0805
2775	2238 916 15641	22nF 10% 25V 0603
2776	3198 030 82280	2.2µF 20% 50V
2777	3198 030 82280	2.2µF 20% 50V
2778	4822 126 14472	1µF 10% 10V 0805
2779	2238 916 15641	22nF 10% 25V 0603
2780	4822 124 23002	10µF 20% 16V
2781	2020 021 91729	4.7µF 20% 35V
2782	4822 126 13193	4.7nF 10% 63V
2783	3198 030 82280	2.2µF 20% 50V
2784	4822 126 13883	220pF 5% 50V
2785	4822 126 13883	220pF 5% 50V
2786	4822 124 23002	10µF 20% 16V
2787	2020 021 91729	4.7µF 20% 35V
2788	4822 126 13193	4.7nF 10% 63V
2789	3198 030 82280	2.2µF 20% 50V
2790	3198 030 82280	2.2µF 20% 50V
2791	4822 126 13879	220nF 20% 16V
2792	4822 126 13883	220pF 5% 50V
2793	4822 126 13883	220pF 5% 50V
2794	4822 126 13883	220pF 5% 50V
2795	4822 126 14506	270pF 5% 50V 0603
2796	4822 126 14506	270pF 5% 50V 0603
2798	2020 552 94427	100pF 5% 50v 0603

Resistors

3601	4822 051 30183	18k 5% 0.062W
3603	4822 051 30153	15k 5% 0.062W
3605	4822 051 30154	150k 5% 0.062W
3606	4822 051 30562	5.6k 5% 0.063W 0603
3607	4822 051 30008	Jumper 0603
3608	4822 051 30153	15k 5% 0.062W
3609	4822 051 30682	6.8k 5% 0.062W
3610	4822 051 30221	220 5% 0.062W
3611	4822 051 30221	220 5% 0.062W
3612	4822 051 30479	47 5% 0.062W
3613	4822 051 30471	470 5% 0.062W
3614	4822 051 30273	27k 5% 0.062W
3615	4822 051 30561	560 5% 0.062W
3616	4822 051 30472	4.7k 5% 0.062W
3618	4822 051 30222	2.2k 5% 0.062W
3624	4822 051 30103	10k 5% 0.062W
3630	4822 051 30101	100 5% 0.062W
3631	4822 051 30391	390 5% 0.062W
3632	4822 051 30102	1k 5% 0.062W
3701	4822 051 30471	470 5% 0.062W
3702	4822 051 30222	2.2k 5% 0.062W
3703	4822 051 30471	470 5% 0.062W
3704	4822 117 13632	100k 1% 0603 0.62W
3705	4822 051 30101	100 5% 0.062W
3706	4822 051 30392	3.9k 5% 0.063W 0603
3707	4822 051 30331	330 5% 0.062W
3708	4822 051 30479	47 5% 0.062W
3709	4822 051 30181	180 5% 0.062W
3710	4822 051 30471	470 5% 0.062W
3712	4822 051 30103	10k 5% 0.062W
3714	4822 051 30223	22k 5% 0.062W
3715	4822 051 30682	6.8k 5% 0.062W
3717	4822 051 30682	6.8k 5% 0.062W
3718	4822 051 30332	3.3k 5% 0.062W
3719	4822 051 30332	3.3k 5% 0.062W
3720	4822 051 30392	3.9k 5% 0.063W 0603
3722	4822 117 12925	47k 1% 0.063W 0603
3724	4822 051 30332	3.3k 5% 0.062W
3727	4822 051 30331	330 5% 0.062W
3728	4822 051 30331	330 5% 0.062W
3730	4822 051 30152	1.5k 5% 0.062W
3731	4822 051 30152	1.5k 5% 0.062W
3740	4822 117 13632	100k 1% 0603 0.62W
3741	4822 100 11088	Potm 5K 30% LIN 0,1W
3742	4822 051 30101	100 5% 0.062W
3743	4822 100 12157	Potm 10K 30%
3744	4822 051 30392	3.9k 5% 0.063W 0603
3745	4822 051 30008	Jumper 0603
3746	4822 051 30008	Jumper 0603
3749	4822 051 30102	1k 5% 0.062W
3750	4822 051 30102	1k 5% 0.062W
3753	4822 051 30102	1k 5% 0.062W
3754	4822 051 30472	4.7k 5% 0.062W
3755	4822 117 13632	100k 1% 0603 0.62W
3756	4822 117 13632	100k 1% 0603 0.62W
3766	4822 117 12968	820 5% 0.62W
3771	4822 051 30103	10k 5% 0.062W
3772	4822 051 30332	3.3k 5% 0.062W
3775	4822 051 30103	10k 5% 0.062W
3776	4822 051 30332	3.3k 5% 0.062W
3778	4822 051 30102	1k 5% 0.062W
3779	4822 051 30102	1k 5% 0.062W
3780	4822 051 30222	2.2k 5% 0.062W
3781	4822 051 30183	18k 5% 0.062W
3782	4822 117 12925	47k 1% 0.063W 0603
3783	4822 117 12903	1.8k 1% 0.063W 0603
3784	4822 051 30472	4.7k 5% 0.062W
3785	4822 051 30472	4.7k 5% 0.062W
3786	4822 051 30222	2.2k 5% 0.062W
3787	4822 051 30183	18k 5% 0.062W
3788	4822 117 12925	47k 1% 0.063W 0603
3789	4822 117 12903	1.8k 1% 0.063W 0603
3790	4822 051 30472	4.7k 5% 0.062W
3792	4822 117 13632	100k 1% 0603 0.62W
3793	4822 117 13632	100k 1% 0603 0.62W
3798	4822 051 30223	22k 5% 0.062W

Filters

5601	2422 549 44607	Bead 600 at 100MHz
5608	2422 549 44607	Bead 600 at 100MHz
5611	2422 549 44607	Bead 600 at 100MHz
5612	2422 549 44607	Bead 600 at 100MHz
5615	2422 549 44607	Bead 600 at 100MHz
5617	2422 549 44607	Bead 600 at 100MHz
5701	4822 157 71206	Bead 600 at 100MHz
5704	4822 157 71206	Bead 600 at 100MHz
5711	4822 157 71206	Bead 600 at 100MHz

Diodes

6602	5322 130 34337	BAV99
6710	5322 130 34331	BAV70
6711	4822 130 11397	BAS316
6751	9340 548 52115	PDZ5.1B

6752	4822 130 11397	BAS316

Transistors & IC's

7602	5322 130 60647	BFR92A SM
7603	5322 130 60647	BFR92A SM
7604	5322 130 60159	BC846B
7606	5322 130 60159	BC846B
7706	4822 130 60373	BC856B
7707	5322 130 42718	BFS20
7755	4822 130 60373	BC856B
7784	5322 130 60159	BC846B
7789	5322 130 60159	BC846B

Transmitter Parts USA

Various

1101	4822 267 10574	Connector 8p
1105	2422 543 00723	Resonator 4MHz 20%
1106	4822 242 10694	Resonator 12MHz

Capacitors

2101	5322 126 11583	10nF 10% 50V 0603
2102	4822 126 14507	18pF 5% 50V 0603
2103	2020 552 96675	10µF 10% 16V 1210
2104	4822 126 14585	100nF 10% 50V
2105	4822 126 13879	220nF 20% 16V
2106	3198 016 31020	1nF 25V 0603
2107	3198 016 31020	1nF 25V 0603
2108	4822 122 33761	22pF 5% 50V
2109	4822 126 13883	220pF 5% 50V
2110	2020 552 96684	470nF 10% 25V
2111	2020 552 96384	5.6pF 25% 50V 0603
2113	4822 126 13887	4.7pF 50V
2114	2238 586 59812	100nF 20-80% 50V 0603
2115	4822 126 13883	220pF 5% 50V
2116	4822 126 11663	12pF 5% 50V 0603
2117	4822 122 33752	15pF 5% 50V
2118	3198 016 31080	1pF 25% 50V 0603
2120	3198 016 31080	1pF 25% 50V 0603
2121	4822 126 13883	220pF 5% 50V
2122	4822 126 13883	220pF 5% 50V
2123	4822 126 11785	47pF 5% 50V 0603
2124	4822 126 11785	47pF 5% 50V 0603
2126	4822 126 11785	47pF 5% 50V 0603
2127	3198 016 32780	2.7pF 50V 0603 NP0
2129	4822 126 13956	68pF 5% 63V 0603
2130	4822 126 13956	68pF 5% 63V 0603
2131	4822 122 33752	15pF 5% 50V
2133	2222 867 15339	33pF 5% 50V 0603
2134	2222 867 15339	33pF 5% 50V 0603
2135	2238 586 59812	100nF 20-80% 50V 0603
2136	2238 586 59812	100nF 20-80% 50V 0603
2139	4822 124 80151	47µF 20% 16V
2140	2238 916 15641	22nF 10% 25V 0603
2141	4822 126 13881	470pF 5% 50V
2142	4822 126 13881	470pF 5% 50V
2143	4822 126 14472	1µF 10% 10V 0805
2144	4822 126 14472	1µF 10% 10V 0805
2145	4822 126 13193	4.7nF 10% 63V
2146	4822 126 13193	4.7nF 10% 63V
2147	4822 126 14472	1µF 10% 10V 0805
2148	4822 126 14472	1µF 10% 10V 0805
2149	4822 124 23002	10µF 20% 16V
2150	4822 124 23002	10µF 20% 16V
2151	4822 122 33761	22pF 5% 50V
2152	4822 122 33761	22pF 5% 50V
2153	4822 124 23002	10µF 20% 16V
2154	4822 124 23002	10µF 20% 16V
2155	4822 126 14506	270pF 5% 50V 0603
2156	4822 126 14506	270pF 5% 50V 0603
2157	3198 030 82280	2.2µF 20% 50V
2158	3198 030 82280	2.2µF 20% 50V
2159	2238 916 15641	22nF 10% 25V 0603
2160	2238 916 15641	22nF 10% 25V 0603
2161	3198 030 82280	2.2µF 20% 50V
2162	3198 030 82280	2.2µF 20% 50V
2163	3198 030 82280	2.2µF 20% 50V
2164	3198 030 82280	2.2µF 20% 50V
2165	2238 916 15641	22nF 10% 25V 0603
2166	2238 916 15641	22nF 10% 25V 0603
2167	4822 124 81059	220µF 20% 4V
2168	2020 021 91729	4.7µF 20% 35V
2170	4822 126 13881	470pF 5% 50V
2171	4822 124 23002	10µF 20% 16V
2172	4822 126 13909	680pF 10% 50V 0603
2173	4822 126 14226	82pF 5% 50V 0603
2175	4822 126 14472	1µF 10% 10V 0805
2176	4822 126 13881	470pF 5% 50V
2177	4822 126 13883	220pF 5% 50V
2178	2238 916 15641	22nF 10% 25V 0603
2179	2238 586 59812	100nF 20-80% 50V 0603
2180	2020 021 91817	470µF 16V 20%
2181	2238 916 15641	22nF 10% 25V 0603
2182	2238 586 59812	100nF 20-80% 50V 0603
2183	2238 586 59812	100nF 20-80% 50V 0603
2184	4822 126 13883	220pF 5% 50V
2185	2020 552 96384	5.6pF 25% 50V 0603
2186	4822 126 14218	3.9pF 6% 50V 0603
2187	4822 126 13887	4.7pF 50V
2188	4822 126 14218	3.9pF 6% 50V 0603
2189	2020 552 96384	5.6pF 25% 50V 0603
2190	4822 126 14218	3.9pF 6% 50V 0603
2191	4822 126 14218	3.9pF 6% 50V 0603
2192	2020 552 96384	5.6pF 25% 50V 0603
2193	4822 126 11785	47pF 5% 50V 0603
2197	4822 126 13883	220pF 5% 50V
2198	4822 126 13883	220pF 5% 50V
2199	4822 124 23002	10µF 20% 16V
2200	2020 552 96384	5.6pF 25% 50V 0603
2201	2020 552 94427	100pF 5% 50v 0603
2202	2020 552 94427	100pF 5% 50v 0603
2205	4822 126 11785	47pF 5% 50V 0603

Resistors

3101	4822 051 30471	470. 5% 0.062W
3102	4822 051 30471	470. 5% 0.062W
3103	4822 051 30102	1k. 5% 0.062W
3104	4822 051 30102	1k. 5% 0.062W
3105	4822 051 30101	100. 5% 0.062W
3107	4822 051 30222	2.2k. 5% 0.062W
3108	4822 051 30222	2.2k. 5% 0.062W
3109	4822 051 30472	4.7k. 5% 0.062W
3110	4822 051 30331	330. 5% 0.062W
3111	4822 051 30103	10k. 5% 0.062W
3112	4822 117 13632	100k. 1% 0603 0.62W
3113	4822 051 30682	6.8k. 5% 0.062W
3114	4822 051 30153	15k. 5% 0.062W
3115	4822 051 30271	270. 5% 0.062W
3116	4822 051 30101	100. 5% 0.062W
3117	4822 117 12925	47k. 1% 0.063W 0603
3118	4822 051 30103	10k. 5% 0.062W
3119	4822 051 30331	330. 5% 0.062W
3120	4822 051 30682	6.8k. 5% 0.062W
3121	4822 117 13501	82. 5% 0.62W 0603
3122	4822 051 30222	2.2k. 5% 0.062W
3123	4822 051 30101	100. 5% 0.062W
3124	4822 051 30151	150. 5% 0.062W
3125	4822 051 30563	56k. 5% 0.062W
3127	4822 051 30689	68. 5% 0.063W 0603
3130	4822 117 12889	270k. 1% 0.063W 0603
3131	4822 051 30222	2.2k. 5% 0.062W
3132	4822 051 30103	10k. 5% 0.062W
3133	4822 051 30154	150k 5% 0.062W
3140	4822 051 30102	1k. 5% 0.062W
3141	4822 051 30102	1k. 5% 0.062W
3142	4822 117 13632	100k. 1% 0603 0.62W
3143	4822 117 13632	100k. 1% 0603 0.62W
3144	4822 051 30153	15k. 5% 0.062W
3145	4822 051 30153	15k. 5% 0.062W
3146	4822 117 12925	47k. 1% 0.063W 0603
3147	4822 117 12925	47k. 1% 0.063W 0603
3150	4822 051 30183	18k. 5% 0.062W
3151	4822 051 30183	18k. 5% 0.062W
3152	4822 051 30183	18k. 5% 0.062W
3153	4822 051 30183	18k. 5% 0.062W
3154	4822 051 30102	1k. 5% 0.062W
3155	4822 051 30102	1k. 5% 0.062W
3156	4822 051 30332	3.3k. 5% 0.062W
3157	4822 051 30332	3.3k. 5% 0.062W
3158	4822 051 30103	10k. 5% 0.062W
3159	4822 051 30103	10k. 5% 0.062W
3160	4822 051 30681	680. 5% 0.062W
3161	4822 051 30681	680. 5% 0.062W
3164	4822 051 30332	3.3k. 5% 0.062W
3165	4822 051 30332	3.3k. 5% 0.062W
3166	4822 051 30393	39k. 5% 0.062W
3167	4822 051 30222	2.2k. 5% 0.062W
3168	4822 051 30222	2.2k. 5% 0.062W
3169	4822 051 30103	10k. 5% 0.062W
3171	4822 051 30684	680k. 5% 0.062W
3172	4822 051 30682	6.8k. 5% 0.062W
3173	4822 051 30273	27k. 5% 0.062W
3174	4822 117 12902	8.2k. 1% 0.063W 0603
3175	4822 051 30153	15k. 5% 0.062W
3176	4822 051 30153	15k. 5% 0.062W
3177	4822 051 30392	3.9k. 5% 0.063W 0603
3178	4822 117 12902	8.2k. 1% 0.063W 0603
3179	4822 100 12157	Potm 10K 30%
3180	4822 051 30472	4.7k. 5% 0.062W
3181	4822 117 12925	47k. 1% 0.063W 0603
3182	4822 051 30391	390. 5% 0.062W
3185	4822 051 30121	120. 5% 0.062W
3186	4822 051 30681	680. 5% 0.062W
3187	4822 051 30223	22k. 5% 0.062W
3188	4822 051 30472	4.7k. 5% 0.062W
3189	4822 051 30103	10k. 5% 0.062W
3190	4822 051 30221	220. 5% 0.062W
3191	4822 051 30221	220. 5% 0.062W
4101	4822 051 30008	Jumper 0603
4102	4822 051 30008	Jumper 0603
4105	4822 051 30008	Jumper 0603
4106	4822 051 20008	Jumper 0805
4107	4822 051 20008	Jumper 0805
4108	4822 051 30008	Jumper 0603

Filters

5101	2422 535 94784	100nH 5% 0603
5103	4822 157 71206	Bead 600. at 100MHz
5104	2422 535 94613	6.8nH 5% 0603
5105	2422 535 94716	8.2nH 5% 0603
5107	2422 535 94613	6.8nH 5% 0603
5109	2422 535 94714	3.3nH 3% 0603
5113	2422 535 94721	12nH 5% 0603
5116	2422 535 94779	39nH 5% 0603
5117	2422 535 94779	39nH 5% 0603
5118	2422 535 94614	3.9nH 3% 0603
5125	4822 157 71206	Bead 600. at 100MHz
5126	4822 157 71206	Bead 600. at 100MHz
5127	4822 157 71206	Bead 600. at 100MHz

Diodes

6101	4822 130 11423	PLVA2656A
6102	9340 550 65115	BB151
6103	4822 130 11148	UDZ4.7B
6105	4822 130 11551	UDZS10B
6106	4822 130 11397	BAS316
6107	3198 020 55680	BZX384-C5V6
6108	5322 130 34331	BAV70

Transistors & IC's

7101	9352 675 58118	TSA5060ATS/C1
7102	5322 130 60159	BC846B
7103	5322 130 60647	BFR92A SM
7104	4822 130 60373	BC856B
7105	9340 188 10235	BFG520/X
7106	9340 188 10235	BFG520/X
7110	5322 209 71591	PC74HC4060T
7111	4822 209 60792	74HC4053D
7112	9337 725 40623	SA572D
7113	9322 180 21668	NJM4565M
7116	9322 180 21668	NJM4565M
7117	9322 144 97668	LD1117DT
7118	5322 130 60159	BC846B
7119	5322 130 60159	BC846B
7120	4822 130 60373	BC856B
7121	5322 130 60159	BC846B

Receiver Partslist USA

Various

1602	2422 549 45394	SAW 864MHz B3589
1706	4822 242 70665	Filter 10.7M
1707	4822 242 70665	Filter 10.7M
1710	2422 549 43868	Coil var. 10.7MHz
1720	2422 540 98572	Resonator 565kHz
1730	2422 549 45464	Filter 20KHz
1740	2422 549 45464	Filter 20KHz
1765	2422 127 00552	Switch slide 4 positions
1790	4822 267 10618	Connector 7p

Capacitors

2601	2222 867 15339	33pF 5% 50V 0603
2602	3198 016 31580	1.5pF 50V 0603
2603	2222 867 15339	33pF 5% 50V 0603
2604	2222 867 15339	33pF 5% 50V 0603
2605	2222 867 15339	33pF 5% 50V 0603
2606	5322 126 11578	1nF 10% 50V 0603
2607	3198 016 31580	1.5pF 50V 0603
2608	5322 126 11583	10nF 10% 50V 0603
2609	3198 016 31080	1pF 25% 50V 0603
2610	4822 126 13193	4.7nF 10% 63V
2611	5322 126 11578	1nF 10% 50V 0603
2619	3198 016 32780	2.7pF 50V 0603 NP0
2620	3198 016 32780	2.7pF 50V 0603 NP0

2621	2020 552 93645	39pF 5% 50V
2623	3198 016 31080	1pF 25% 50V 0603
2624	4822 126 14507	18pF 5% 50V 0603
2625	4822 123 14018	2.2µF 10% 10V
2626	4822 126 13879	220nF 20% 16V
2627	4822 126 13879	220nF 20% 16V
2630	4822 122 33761	22pF 5% 50V
2640	2222 867 15339	33pF 5% 50V 0603
2642	4822 126 13879	220nF 20% 16V
2650	4822 124 23002	10µF 20% 16V
2651	3198 016 32780	2.7pF 50V 0603 NP0
2652	2222 867 15339	33pF 5% 50V 0603
2660	4822 126 11785	47pF 5% 50V 0603
2661	4822 126 13879	220nF 20% 16V
2702	2238 586 55639	18nF 10% 50V 0603
2703	2238 586 55639	18nF 10% 50V 0603
2704	4822 124 23002	10µF 20% 16V
2705	4822 124 23002	10µF 20% 16V
2706	2238 916 15641	22nF 10% 25V 0603
2707	4822 124 23002	10µF 20% 16V
2708	3198 017 34730	47nF 16V 0603
2709	4822 126 14247	1.5nF 50V 0603
2713	3198 017 34730	47nF 16V 0603
2714	3198 017 34730	47nF 16V 0603
2715	4822 124 23002	10µF 20% 16V
2716	2020 552 94427	100pF 5% 50v 0603
2718	2020 021 91729	4.7µF 20% 35V
2720	4822 124 23002	10µF 20% 16V
2721	4822 124 23002	10µF 20% 16V
2722	4822 124 23002	10µF 20% 16V
2723	4822 126 14472	1µF 10% 10V 0805
2724	4822 126 14583	470nF 10% 16V 0805
2725	4822 126 14472	1µF 10% 10V 0805
2730	4822 126 13883	220pF 5% 50V
2740	4822 126 13883	220pF 5% 50V
2750	2020 552 94427	100pF 5% 50v 0603
2751	4822 126 13881	470pF 5% 50V
2754	2020 021 91729	4.7µF 20% 35V
2755	4822 124 12095	100µF 20% 16V
2762	4822 126 11785	47pF 5% 50V 0603
2764	2238 586 15628	2n7 10% 50V 0603
2765	2238 586 15628	2n7 10% 50V 0603
2770	2020 021 91729	4.7µF 20% 35V
2771	2238 916 15641	22nF 10% 25V 0603
2772	3198 030 82280	2.2µF 20% 50V
2773	3198 030 82280	2.2µF 20% 50V
2774	4822 126 14472	1µF 10% 10V 0805
2775	2238 916 15641	22nF 10% 25V 0603
2776	3198 030 82280	2.2µF 20% 50V
2777	3198 030 82280	2.2µF 20% 50V
2778	4822 126 14472	1µF 10% 10V 0805
2779	2238 916 15641	22nF 10% 25V 0603
2780	4822 124 23002	10µF 20% 16V
2781	2020 021 91729	4.7µF 20% 35V
2782	4822 126 13193	4.7nF 10% 63V
2783	3198 030 82280	2.2µF 20% 50V
2784	4822 126 13883	220pF 5% 50V
2785	4822 126 13883	220pF 5% 50V
2786	4822 124 23002	10µF 20% 16V
2787	2020 021 91729	4.7µF 20% 35V
2788	4822 126 13193	4.7nF 10% 63V
2789	3198 030 82280	2.2µF 20% 50V
2790	3198 030 82280	2.2µF 20% 50V
2791	4822 126 13879	220nF 20% 16V
2792	4822 126 13883	220pF 5% 50V
2793	4822 126 13883	220pF 5% 50V
2794	4822 126 13883	220pF 5% 50V
2795	4822 126 14506	270pF 5% 50V 0603
2796	4822 126 14506	270pF 5% 50V 0603
2798	2020 552 94427	100pF 5% 50v 0603

Resistors

3601	4822 051 30183	18k 5% 0.062W
3603	4822 051 30153	15k 5% 0.062W
3605	4822 051 30154	150k 5% 0.062W
3606	4822 051 30562	5.6k 5% 0.063W 0603
3607	4822 051 30008	Jumper 0603
3608	4822 051 30153	15k 5% 0.062W
3609	4822 051 30682	6.8k 5% 0.062W
3610	4822 051 30221	220 5% 0.062W
3611	4822 051 30221	220 5% 0.062W
3612	4822 051 30479	47 5% 0.062W
3613	4822 051 30471	470 5% 0.062W
3614	4822 051 30273	27k 5% 0.062W
3615	4822 051 30561	560 5% 0.062W
3616	4822 051 30472	4.7k 5% 0.062W
3618	4822 051 30222	2.2k 5% 0.062W
3624	4822 051 30103	10k 5% 0.062W
3630	4822 051 30101	100 5% 0.062W
3631	4822 051 30391	390 5% 0.062W
3632	4822 051 30102	1k 5% 0.062W
3701	4822 051 30471	470 5% 0.062W
3702	4822 051 30222	2.2k 5% 0.062W
3703	4822 051 30471	470 5% 0.062W
3704	4822 117 13632	100k 1% 0603 0.62W
3705	4822 051 30101	100 5% 0.062W
3706	4822 051 30392	3.9k 5% 0.063W 0603
3707	4822 051 30331	330 5% 0.062W
3708	4822 051 30479	47 5% 0.062W
3709	4822 051 30181	180 5% 0.062W
3710	4822 051 30471	470 5% 0.062W
3712	4822 051 30103	10k 5% 0.062W
3714	4822 051 30223	22k 5% 0.062W
3715	4822 051 30682	6.8k 5% 0.062W
3717	4822 051 30682	6.8k 5% 0.062W
3718	4822 051 30332	3.3k 5% 0.062W
3719	4822 051 30332	3.3k 5% 0.062W
3720	4822 051 30392	3.9k 5% 0.063W 0603
3722	4822 117 12925	47k 1% 0.063W 0603
3724	4822 051 30332	3.3k 5% 0.062W
3727	4822 051 30331	330 5% 0.062W
3728	4822 051 30331	330 5% 0.062W
3730	4822 051 30152	1.5k 5% 0.062W
3731	4822 051 30152	1.5k 5% 0.062W
3740	4822 117 13632	100k 1% 0603 0.62W
3741	4822 100 11088	Potm 5K 30% LIN 0,1W
3742	4822 051 30101	100 5% 0.062W
3743	4822 100 12157	Potm 10K 30%
3744	4822 051 30392	3.9k 5% 0.063W 0603
3745	4822 051 30008	Jumper 0603
3746	4822 051 30008	Jumper 0603
3749	4822 051 30102	1k 5% 0.062W
3750	4822 051 30102	1k 5% 0.062W
3753	4822 051 30102	1k 5% 0.062W
3754	4822 051 30472	4.7k 5% 0.062W
3755	4822 117 13632	100k 1% 0603 0.62W
3756	4822 117 13632	100k 1% 0603 0.62W
3766	4822 117 12968	820 5% 0.62W
3771	4822 051 30103	10k 5% 0.062W
3772	4822 051 30332	3.3k 5% 0.062W
3775	4822 051 30103	10k 5% 0.062W
3776	4822 051 30332	3.3k 5% 0.062W
3778	4822 051 30102	1k 5% 0.062W
3779	4822 051 30102	1k 5% 0.062W
3780	4822 051 30222	2.2k 5% 0.062W
3781	4822 051 30183	18k 5% 0.062W
3782	4822 117 12925	47k 1% 0.063W 0603
3783	4822 117 12903	1.8k 1% 0.063W 0603
3784	4822 051 30472	4.7k 5% 0.062W
3785	4822 051 30472	4.7k 5% 0.062W
3786	4822 051 30222	2.2k 5% 0.062W
3787	4822 051 30183	18k 5% 0.062W
3788	4822 117 12925	47k 1% 0.063W 0603
3789	4822 117 12903	1.8k 1% 0.063W 0603
3790	4822 051 30472	4.7k 5% 0.062W
3792	4822 117 13632	100k 1% 0603 0.62W
3793	4822 117 13632	100k 1% 0603 0.62W
3798	4822 051 30223	22k 5% 0.062W

Filters

5601	2422 549 44607	Bead 600 at 100MHz
5603	2422 535 94785	1nH 3% 0603
5604	2422 535 94776	4.7nH 3% 0603
5605	2422 535 94782	56nH 5% 0603
5606	2422 549 45299	Trimmer 10mH
5608	2422 549 44607	Bead 600 at 100MHz
5611	2422 549 44607	Bead 600 at 100MHz
5612	2422 549 44607	Bead 600 at 100MHz
5614	2422 535 94613	6.8nH 5% 0603
5615	2422 549 44607	Bead 600 at 100MHz
5616	2422 535 94614	3.9nH 3% 0603
5617	2422 549 44607	Bead 600 at 100MHz
5701	4822 157 71206	Bead 600 at 100MHz
5704	4822 157 71206	Bead 600 at 100MHz
5711	4822 157 71206	Bead 600 at 100MHz

Diodes

6601	9340 550 65115	BB151
6602	5322 130 34337	BAV99
6710	5322 130 34331	BAV70
6711	4822 130 11397	BAS316
6751	9340 548 52115	PDZ5.1B
6752	4822 130 11397	BAS316

Transistors & IC's

7601	9340 414 20115	BFC520
7602	5322 130 60647	BFR92A SM
7603	5322 130 60647	BFR92A SM
7604	5322 130 60159	BC846B
7605	9352 675 58118	TSA5060ATS/C1
7606	5322 130 60159	BC846B
7705	4822 130 63087	BF545A
7706	4822 130 60373	BC856B
7707	5322 130 42718	BFS20
7710	9322 183 01668	LA1836M
7750	9322 183 39668	PIC12C508A
7755	4822 130 60373	BC856B
7770	9337 725 40623	SA572D
7780	9322 180 21668	NJM4565M
7784	5322 130 60159	BC846B
7789	5322 130 60159	BC846B
7790	9322 140 09668	L4931CD80

Amplifier Parts

Various

1104	2422 025 10647	1P Male
1106	4822 267 10618	Connector 7p
1107	2422 025 10768	Connector 3p m

Capacitors

2100	2222 581 15654	220nF 10% 50V 1206
2101	2222 581 15654	220nF 10% 50V 1206
2102	3198 028 44790	47µF 20% 35V
2103	2222 581 15654	220nF 10% 50V 1206
2104	2222 581 15654	220nF 10% 50V 1206
2105	2222 581 15654	220nF 10% 50V 1206
2106	2222 586 18812	100nF 10% 50V 0603
2107	5322 116 80853	560pF 5% 63V
2108	5322 116 80853	560pF 5% 63V
2109	2222 581 15654	220nF 10% 50V 1206
2110	2020 552 96684	470nF 10% 25V
2111	5322 122 31647	1nF 10% 63V
2112	4822 126 14076	220nF 25V. 20%
2113	4822 126 14076	220nF 25V. 20%
2114	2020 552 96684	470nF 10% 25V
2115	2020 552 94427	100pF 5% 50v 0603
2116	4822 126 13956	68pF 5% 63V 0603
2117	4822 126 13188	15nF 5% 63V
2118	4822 126 11785	47pF 5% 50V 0603
2119	5322 122 31647	1nF 10% 63V
2121	4822 126 14076	220nF 25V. 20%
2122	4822 121 51252	470nF 5% 63V
2123	2222 581 15654	220nF 10% 50V 1206
2125	4822 121 51252	470nF 5% 63V
2126	2222 581 15654	220nF 10% 50V 1206
2127	2222 581 15654	220nF 10% 50V 1206
2128	4822 126 13188	15nF 5% 63V
2129	2020 552 96684	470nF 10% 25V
2130	5322 122 31647	1nF 10% 63V
2131	4822 126 14076	220nF 25V. 20%
2132	4822 126 14076	220nF 25V. 20%
2133	2020 552 94427	100pF 5% 50v 0603
2134	2020 552 96684	470nF 10% 25V
2135	4822 126 11785	47pF 5% 50V 0603
2136	5322 122 31647	1nF 10% 63V
2137	2222 581 15654	220nF 10% 50V 1206
2138	5322 116 80853	560pF 5% 63V
2139	5322 116 80853	560pF 5% 63V
2140	3198 028 44790	47µF 20% 35V
2141	2222 581 15654	220nF 10% 50V 1206
2143	4822 126 11785	47pF 5% 50V 0603
2147	4822 126 11785	47pF 5% 50V 0603
2148	2222 580 15649	100nF 10% 50V 0805
2149	4822 124 12095	100µF 20% 16V
2150	2222 580 15649	100nF 10% 50V 0805
2151	4822 124 12095	100µF 20% 16V
2152	4822 124 23002	10µF 20% 16V
2155	4822 124 80791	470µF 20% 16V
2156	4822 124 12056	1000?F 20% 35V
2157	4822 124 12056	1000?F 20% 35V
2162	2020 552 94427	100pF 5% 50v 0603
2164	4822 124 40764	22µF 100 V
2165	2020 552 94427	100pF 5% 50v 0603
2166	3198 016 31020	1nF 25V 0603
2167	3198 016 31020	1nF 25V 0603
2168	3198 016 31020	1nF 25V 0603
2170	4822 126 11785	47pF 5% 50V 0603
2171	4822 126 11785	47pF 5% 50V 0603
2172	4822 126 11785	47pF 5% 50V 0603
2173	4822 126 11785	47pF 5% 50V 0603

Resistors

3100	4822 051 30393	39k 5% 0.062W
3101	4822 051 10568	5.6 5% 0,25W
3102	4822 051 10568	5.6 5% 0,25W
3103	4822 051 30103	10k 5% 0.062W
3105	4822 051 30563	56k 5% 0.062W
3106	2322 762 60229	22 5% 1005

3109	4822 051 30393	39k 5% 0.062W
3111	2322 762 60229	22 5% 1005
3112	4822 051 30103	10k 5% 0.062W
3113	4822 051 30563	56k 5% 0.062W
3114	4822 051 10568	5.6 5% 0,25W
3115	4822 051 10568	5.6 5% 0,25W
3116	4822 051 30102	1k 5% 0.062W
3119	4822 051 30393	39k 5% 0.062W
3120	4822 116 52219	330 5% 0.5W
3121	4822 051 30333	33k 5% 0.062W
3122	4822 116 52219	330 5% 0.5W
3124	4822 051 30102	1k 5% 0.062W
3127	4822 051 30393	39k 5% 0.062W
3128	4822 051 30333	33k 5% 0.062W
3129	4822 051 30222	2.2k 5% 0.062W
3133	4822 117 12925	47k 1% 0.063W 0603
3135	2322 704 65604	560k 1% 0603
3136	4822 116 52219	330 5% 0.5W
3137	4822 116 52219	330 5% 0.5W
3138	4822 051 30103	10k 5% 0.062W
3140	4822 051 30222	2.2k 5% 0.062W
3141	4822 051 30223	22k 5% 0.062W
3142	4822 051 30103	10k 5% 0.062W
3143	4822 117 12925	47k 1% 0.063W 0603
3147	2322 704 65604	560k 1% 0603
3148	4822 051 30222	2.2k 5% 0.062W
3149	4822 051 30222	2.2k 5% 0.062W
3150	4822 117 13632	100k 1% 0603 0.62W
3151	4822 117 12925	47k 1% 0.063W 0603
3153	4822 051 30103	10k 5% 0.062W
3155	4822 051 30222	2.2k 5% 0.062W
3156	4822 051 30103	10k 5% 0.062W
3157	4822 051 30103	10k 5% 0.062W
3158	4822 051 30222	2.2k 5% 0.062W
4100	4822 051 30008	Jumper 0603
4101	4822 051 30008	Jumper 0603
4102	4822 051 30008	Jumper 0603
4103	4822 051 30008	Jumper 0603
4104	4822 051 20008	Jumper 0805
4105	4822 051 20008	Jumper 0805
4106	4822 051 20008	Jumper 0805
4107	4822 051 20008	Jumper 0805
4108	4822 051 30008	Jumper 0603
4109	4822 051 30008	Jumper 0603
4110	4822 051 30008	Jumper 0603
4111	4822 051 30008	Jumper 0603
4112	4822 051 30008	Jumper 0603
4113	4822 051 30008	Jumper 0603
4114	4822 051 30008	Jumper 0603
4115	4822 051 30008	Jumper 0603
4116	4822 051 30008	Jumper 0603

Filters

5104	2422 536 00496	22µH 10%
5105	2422 536 00496	22µH 10%

Diodes

6100	4822 130 11397	BAS316
6101	4822 130 34233	BZX79-B5V1
6102	4822 130 34281	BZX79-B15
6103	4822 130 11397	BAS316
6104	4822 130 34281	BZX79-B15
6105	4822 130 11397	BAS316
6106	4822 130 82714	BZX79-B2V7
6109	4822 130 10791	LTL-1CHGE
6110	4822 130 82978	LTL-16KPE-P

Transistors

7104	5322 130 60159	BC846B
7106	5322 130 60159	BC846B
7107	5322 130 60159	BC846B
7109	5322 130 60159	BC846B
7110	5322 130 60159	BC846B
7112	5322 130 60159	BC846B